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COMMERCIAL FISHERIES REVIEW



A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

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NEW WHITING PRODUCTS TESTED AT UNIVERSITY OF MASSACHUSETTS ANNUAL SCHOOL-LUNCH CONFERENCE

By Kevin J. Allen* and Edward H. Cohen**

ABSTRACT

In its efforts to assist the whiting industry, the U. S. Bureau of Commercial Fisheries has learned that a need exists for product diversification in that industry. Competition in the traditional markets and variable quality of the product have had a depressing effect on the important New England whiting fishery.

This article reports on the results of eliciting opinions of supervisors and managers of school-lunch programs as to the acceptability in school lunches of whiting served in fish portions, fish sticks, fishburgers, fish jelly roll, and fish croquettes.

INTRODUCTION

The announcement shown on this page was distributed to 150 supervisors and managers of school-lunch programs as they registered at the University of Massachusetts in Amherst, Mass., for their annual state-wide School-Lunch Conference which took place in July 1962.

A NEW TWIST--THE TEST IS IN THE TASTE

Will the children eat it?

The School Lunch Program and the fishing industry have one thing in common. Both are trying to come up with new ideas for menus that will appeal to the children of the Nation. The U. S. Bureau of Commercial Fisheries has developed a number of fishery products with a new twist. The Bureau thinks these are the type of products you would like to serve. It is not the Bureau's intention to attempt to sell these products to you at this meeting but rather to show them to you, ask you to sample them, and then have you give an honest opinion as to their possible acceptability in the School-Lunch Program. You are the experts. The Bureau wants your ideas concerning the types of new products that you want.

This program will be presented by Kevin J. Allen, Fishery Marketing Specialist, Branch of Marketing, and Edward H. Cohen, Chemist, both of the Bureau of Commercial Fisheries.

Fig. 1 - Announcement distributed to school-lunch personnel at Massachusetts state-wide School-Lunch Conference.

In addition to their regular business sessions, the school-lunch people each attended one of the following six "Special Interest Sessions:"

Type "A" Lunch Analysis

The Ups and Downs of Recipe Adjusting

Timely Tips on Equipment

A New Twist--The Test is in The Taste

Meeting the Needs of our School-Lunch Customers

Accounting Clinic to Relieve Record-keeping Headaches

Of the 150 registered supervisors and managers of school-lunch programs, 74 (or 49 percent) attended the special session called "A New Twist--The Test is in The Taste." The

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Bureau's purpose in requesting their aid at that session was to determine the acceptability and marketing feasibility of new whiting products.

The products evaluated were: (1) fish portions, (2) fish sticks, (3) fishburgers, (4) fish jelly roll, and (5) fish croquettes. The purpose of this article is to report the reaction of the school-lunch people to those five whiting products.

FISH PORTIONS

Fish portions were made from skinless whiting fillets frozen in a 13½-pound block, cut with a band saw, battered and breaded, deep-fried, and packaged.

The reaction of the school lunch supervisors and managers to this product is shown in table 1. The portions were the most popular of the five products served, and they received the fewest adverse comments. The general feeling was that the portions would be readily acceptable by children. A few small bones were found in the samples and there was immediate objection to this. Most of the comments were as follows: "the best I have ever tasted," "excellent," "tasty," and "would be accepted."

Rating	Number Choosing Indicated Rating	Relative Number Choosing Indicated Rating
	No.	%
Like extremely	18	24
Like very much	33	45
Like moderately	17	23
Like slightly	3	4
Neither like nor dislike	2	3
Dislike slightly	-	-
Dislike moderately . .	-	-
Dislike very much . . .	-	-
Dislike extremely . . .	-	-
Not rated	-	-
Total	74	100

FISH STICKS

Fish sticks were made from skinless whiting fillets frozen in a 13½-pound block, cut with a band saw, battered and breaded, deep-fried, and packaged.

The reaction to this product is shown in table 2. The participants were unanimous in their opinion that the fish sticks would be acceptable to the children. They felt, however, that the fish sticks should be served with tartar sauce or ketchup. The main complaint regarding the samples was lack of seasoning. A

Rating	Number Choosing Indicated Rating	Relative Number Choosing Indicated Rating
	No.	%
Like extremely	9	12
Like very much	39	53
Like moderately	14	19
Like slightly	7	10
Neither like nor dislike	3	4
Dislike slightly	1	1
Dislike moderately . .	-	-
Dislike very much . . .	1	1
Dislike extremely . . .	-	-
Total	74	100



Fig. 2 - Children being served fish sticks in a school lunchroom in Manchester, Mass. The school-lunch programs are a large potential market for new types of fishery products provided they are developed to appeal to children.

few small bones were found in the samples, and again testers objected to this. Some thought the fish sticks were the best they had ever tasted and were better than the products now on the market. Because fish sticks are readily available and popular in the school lunch, the participants thought that fish sticks made from whiting would be readily acceptable.

FISHBURGERS

Fishburgers were made from the flakes of steamed whiting fillets. The other ingredients consisted of onions, butter, fish liquid or milk, bread crumbs, eggs, parsley, mustard, and salt. The product was shaped into burgers, rolled in crumbs, and pan-fried for 4 minutes on each side.

The reaction to this product is shown in table 3. Participants were unanimous in their opinion that the fishburgers contained too much onion and not enough salt. There was a difference of opinion regarding the acceptability by the children. The primary reason that children would reject them was the amount of onion. Many of the school-lunch people felt that the burgers, though not acceptable to the small children, would be readily accepted by older children and by high school students.

Table 3 - How Fishburgers Were Rated by Supervisors and Managers of School-Lunch Programs

Rating	Number Choosing Indicated Rating	Relative Number Choosing Indicated Rating
	No.	%
Like extremely	18	24
Like very much	25	34
Like moderately	17	23
Like slightly	7	9
Neither like nor dislike . .	2	9
Dislike slightly	3	4
Dislike moderately	-	-
Dislike very much	2	3
Dislike extremely	-	-
Total	74	100

FISH JELLY ROLL

Table 4 - How Fish Jelly Roll Was Rated by Supervisors and Managers of School-Lunch Programs

Rating	Number Choosing Indicated Rating	Relative Number Choosing Indicated Rating
	No.	%
Like extremely	3	4
Like very much	4	5
Like moderately	8	11
Like slightly	7	10
Neither like nor dislike . .	6	8
Dislike slightly	8	11
Dislike moderately	13	18
Dislike very much	24	32
Dislike extremely	1	1
Total	74	100

Fish jelly roll was prepared by cutting whiting fillets into 1-inch chunks, adding olives, pimentos, carrots, salt, gelatin, spices, vinegar, and water. The mixture was stuffed into a casing, heat processed, and then refrigerated.

The reaction to this product is shown in table 4. The participants were unanimous in their dislike for fish rolls. All agreed it would not be accepted in the schools, though a few thought it had possibility as an hors d'oeuvres for adults only.

FISH CROQUETTES

Fish croquettes were made from the flakes of steamed whiting fillets. The other ingredients were onions, butter, flour, milk, eggs, salt, pepper, parsley, and bread crumbs. These ingredients were mixed and shaped into croquettes and then were deep-fried for 3-4 minutes.

The reaction to this product is shown in table 5. Although the participants readily accepted the croquettes and liked them, there was a difference of opinion on whether the children would accept them. Some of the participants who thought the children would accept them suggested that the croquettes be served with a sauce. Participants who thought the children would not accept fish croquettes based their opinion on the fact the children did not like chicken croquettes.

Table 5 - How Fish Croquettes Were Rated by Supervisors and Managers of School-Lunch Programs

Rating	Number Choosing Indicated Rating	Relative Number Choosing Indicated Rating
	No.	%
Like extremely	14	19
Like very much	35	47
Like moderately	10	14
Like slightly	7	9
Neither like or dislike . .	2	3
Dislike slightly	6	8
Dislike moderately	-	-
Dislike very much	-	-
Dislike extremely	-	-
Total	74	100

SUMMARY AND CONCLUSIONS

1. Most of the supervisors and managers of school-lunch programs who participated in the test were receptive to the new products. The participants felt that the products, with the

exception of the jelly roll, were good and that little trouble would be found in marketing them.

2. Opinions varied with respect to the desired optimum amount of seasoning required in each product. Onion and salt were the seasonings in question. (To overcome these objections, we will adjust the recipes used in future tests.)

3. Participants pointed out that all portions must contain at least 2 ounces of cooked fish meat per serving for use in the school-lunch program.

4. The participants felt that the initial introduction of new whiting products should be limited to portions and sticks. They based their opinion on the fact that other portion and fish stick products were widely acceptable in the school-lunch program.

5. Participants all agreed that products that contained bones would not be accepted by small children.

6. The participants were of the opinion that fish sticks and fish portions would be most acceptable to the younger children. Croquettes and burgers would find greater acceptance by older children than by younger ones.

7. Participants suggested that the products be tested by school-lunch personnel in other states to get a complete picture of their acceptability.

8. The group participating in this testing was small and represents a minute percentage of school-lunch supervisors and managers throughout the country. The results, however, were encouraging enough to warrant further testing of the products in other areas.



SALMON SPAWNED IN FRESH WATER ADAPT TO SALT WATER

The quick adaptation to salt water by salmon spawned in fresh water that return to the sea is due to their gill systems, research by a zoologist of the University of California, Los Angeles, has indicated.

Theoretically, when the fish go from fresh water into the high salinity of the sea, they should normally be expected to dehydrate. Studies of salmon tagged with radioactive sodium chloride have shown that they are able to change the permeability of the gill system so they lose very little water in the change-over from fresh to salt water. Because of that, the salt concentration does not build up in their blood.

Certain sea-going frogs in Thailand, as well as European toads, also can adapt to a salt-water environment. Their tolerance to increased salt concentration in their body, the University zoologist said, is largely through regulation of their kidney mechanism. Unlike the salmon, however, the body fluids of the European toad become almost equal in salt concentration to the water in which they live.

The zoologist has been doing research on salmon under a grant from the National Science Foundation. (Science News Letter, August 11, 1962.)

LENGTH-WEIGHT RELATIONSHIP AND STOMACH CONTENTS OF THE SWELLFISH (SPHEROIDES MACULATUS) IN THE YORK RIVER, VIRGINIA

By Peter A. Isaacson*

ABSTRACT

Data are presented on the relationship between total length and weight of the swellfish (Spheroides maculatus) based on measurements of 109 fish caught by the author from the York River in Virginia. The fish ranged in total length from 109 to 304 mm. (about 4.3 to 12.0 inches), and in weight from 26 to 536 grams (about 0.9 to 18.9 ounces). As is to be expected, plotting of weights of individual fish against their respective lengths indicates a definite relationship between those measurements.

The stomachs of 48 specimens ranging in length from 142 to 271 mm. (10.7 inches) were examined. No variation in diet could be correlated with size, sex, or condition.

Comparison between data on swellfish from the York River and from New Jersey waters indicated that even though the food habits were similar, the York River fish were significantly heavier.

INTRODUCTION

The American Fisheries Advisory Committee (which includes representatives of the commercial fishing industry from all parts of the United States), at a meeting in Kansas City, Mo., in December 1962, outlined five steps which would help American commercial fishermen meet the competition of foreign fishing fleets. Among the recommendations was the development of untapped fishery resources which may exist in large quantities.

Commercial fishery statistics show that there is a concentration of effort on a few species of fish, and that many other species are not used for human consumption. The rejection of a number of species is the result of lack of familiarity and a reluctance on the part of the consumer to try something new (Carson 1943).

The principal purpose of this paper is to show that the swellfish (Spheroides maculatus), a species which has not been fully exploited, is present in sufficient quantity and of a marketable size to make a larger commercial venture profitable.

The swellfish is found in abundance from Florida to Cape Cod. Beginning in late April it forms a significant part of the catch of the pound-net fishery in the Chesapeake Bay area. In late May it becomes one of the greater nuisances to the sport fishermen in the New York area.

Early in the fishing season there is a small market for the swellfish. Unfortunately, this market is glutted rapidly, and as the season progresses the excess catches go into the "scrap fish" sold to reduction plants. At the peak of their abundance the swellfish are culled from the "scrap fish" because the reduction plants refuse to accept them.¹ This results in a drop in price from about 20 cents a pound ex-vessel to nothing. The average ex-vessel price for swellfish in 1960 was 2.9 cents a pound (Power 1961).

MATERIALS AND METHODS

During the summer of 1962, the author (working out of the Virginia Institute of Marine Science, Gloucester Point, Va.) kept records of lengths, weights, and sex of swellfish caught both in pound nets and by anglers fishing in the York River.

*Formerly Assistant Research Specialist, Department of Entomology, Cornell University, Ithaca, N. Y.; now Marine Biologist, Marine Resources Section, Department of Fish and Game, Terminal Island, Calif.

¹/Because of the tough hide of swellfish, an overload will damage processing machinery at reduction plants.

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In the compilation of the length-weight data, the total lengths were placed in 10-mm. (0.4-inch) classes. The number of individuals in each interval; and the minimum, average, and maximum weights are listed in table 1. The length of the fish ranged from 109 to 304 mm. (4.3 to 12.0 inches) with corresponding weights of 26 to 536 grams (0.9 to 18.9 ounces).

Welsh and Breder (1922) determined a coefficient of condition of swellfish from the New Jersey area by assuming that the weights of the fish vary as the cube of the length multiplied by a constant calculated from the formula: $W = \frac{L^3}{K}$. They found that this relation does not follow the plotted curve exactly due to differences from specimen to specimen in sex, food in the gut, and the development of the gonads. For the sample of fish measured, they calculated a K value of 56. When this formula is applied to the sample of fish from Virginia waters, the value of K is equal to 41.5 which indicates that the fish from Virginia are significantly heavier than the fish of corresponding length from New Jersey.

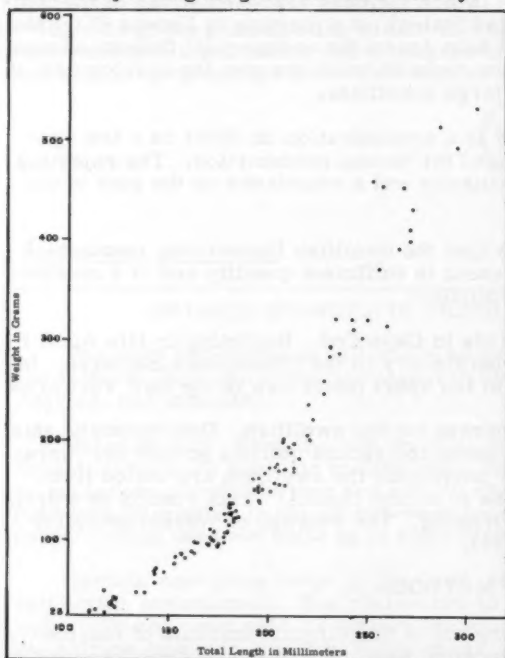


Fig. 1 - Random sample of length frequencies of swellfish from the catch of a commercial pound-net fisherman in the York River.

Table 1 - Length and Weight Distribution of Sampled Swellfish

Total Length (mm.)	Number of Fish	Weight (grams)		
		Minimum	Average	Maximum
100-110	1	-	26.0	-
110-120	3	30.0	38.3	50.0
120-130	3	33.0	35.3	39.0
130-140	3	48.0	55.3	68.0
140-150	4	57.0	64.8	68.0
150-160	5	76.0	83.0	87.0
160-170	7	87.0	97.6	113.0
170-180	14	92.0	108.4	132.0
180-190	14	119.0	129.6	145.0
190-200	11	134.0	154.5	173.0
200-210	11	149.0	173.1	202.0
210-220	7	169.0	187.4	206.0
220-230	6	200.0	205.9	278.0
230-240	4	286.0	298.0	324.0
240-250	3	302.0	312.7	322.0
250-260	4	315.0	372.8	482.0
260-270	2	391.0	423.0	455.0
270-280	4	400.0	424.8	453.0
280-290	1	-	517.0	-
290-300	1	-	494.0	-
300-310	1	-	536.0	-

Table 2 - Analysis of Stomach Contents of Virginia Swellfish (Total Number of Fish, 48)

Food Item	Found in
Blue crab	No. 12
Annelid worm	27
Snail (<i>Haminoea</i>)	8
Clam	18
Isopods	1
Cumacea	1
Mud crab	8
Caprellids	4
Hermit crab	1
Mantis shrimp	1
Anemone	1
Shrimp	1
Unidentified	1

Table 3 - Analysis of Stomach Contents of New Jersey Swellfish^{1/} (Total Number of Fish, 102)

Food Item	Found in
Small crabs	No. 14
Crustaceans (unident.)	2
Mussels	7
Univalves	1
Unident.	82
Empty	16

^{1/}Linton (1905) on examining 15 specimens found: oysters, scallops, mussels, razor clams, gastropods, barnacles, crabs, shrimp, sea urchins, worms, acidians, bryozoans, and a watermelon seed. These fish were caught in the Beaufort, N. C., area.

A comparison of the food eaten by both groups (tables 2 and 3) indicates that there are no differences in the food habits, and that the diet depends largely on what organisms are available in the local habitat.

In May of 1962, a random sample of length frequencies was taken of swellfish from the catch of a commercial pound-net fisherman in the York River. On the basis of the length-weight plot (fig. 1) approximately 41 percent of the total sample was of marketable size (fig. 2).

The fishery statistics from the Middle Atlantic States show over 1.3 million pounds of swellfish landed by commercial methods during the 1960 fishing season. This, in the opinion of the author, represents only about one third of the actual catch. Since most of those fish are culled and never reach the market, they are not recorded.

SUMMARY AND CONCLUSIONS

The swellfish represents a significant fishery resource which is not fully used but which could be exploited more fully if the market were expanded. If there were more information on the distribution and yearly fluctuations in the abundance of this species, it might be feasible to harvest this fish for market in much greater quantities. This would aid the commercial fishermen to increase their earnings and, at the same time, it would ease somewhat the pressure on the species of fish which are more heavily exploited.

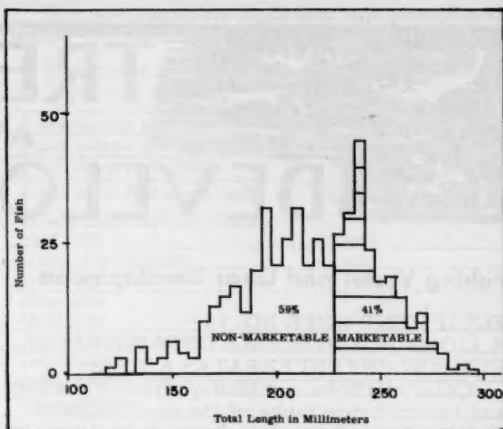


Fig. 2 - About 41 percent of the total sample of swellfish was marketable size.

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Created in 1849, the Department of the Interior—America's Department of Natural Resources—is concerned with the management, conservation, and development of the Nation's water, fish, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States—now and in the future.

TRENDS AND DEVELOPMENTS

Fishing Vessel and Gear Developments

EQUIPMENT NOTE NO. 14-- A LIGHT BOX FOR PHOTOGRAPHING FISH AND INVERTEBRATES AT SEA:

Colored slides and photographs of the fish and invertebrate fauna of the northeastern Pacific Ocean for use in lectures, publications, and identification keys are being compiled by the U. S. Bureau of Commercial Fisheries Exploratory Fishing and Gear Research Base, Seattle, Wash.

The natural colors of most fish and invertebrates fade rapidly upon removal of the animals from their environments. Therefore, it is necessary to photograph them within minutes after capture to obtain their

true living color patterns. Initial attempts to photograph specimens at sea were unsatisfactory owing to unsuitable background and lighting, which caused reflections and shadows. To alleviate these problems, a special "light box" was developed. Use of the light box in conjunction with photoflood lamps has provided excellent colored photographs of fish and invertebrates from 6 to 45 centimeters or 2.36 to 17.72 inches (fig. 1).

DESCRIPTION AND MATERIALS

The dimensions of the light box, 27 inches long, 23 inches wide, and 10½ inches deep, were regulated by the maximum field of view encompassed by the camera lens at a distance of 30 inches and the space available in the vessel's wet laboratory (fig. 2).



Yellowtail Rockfish
(*Sebastes flavidus*)



Longspine Channel Rockfish
(*Sebastes altivelis*)



Spot Shrimp
(*Pandalus platyceros*)



Tanner Crab
(*Chionoecetes tanneri*)

Fig. 1 Photographs taken at sea using the light box installed aboard the John N. Cobb, a U. S. Bureau of Commercial Fisheries exploratory fishing vessel.

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Fluorescent lights were selected for the background lighting, because they provide low heat emission and greater dispersion of light. White-flashed opal glass was used to further diffuse the lighting into a white uniform background, and safety plate glass was used for the photographic stage.

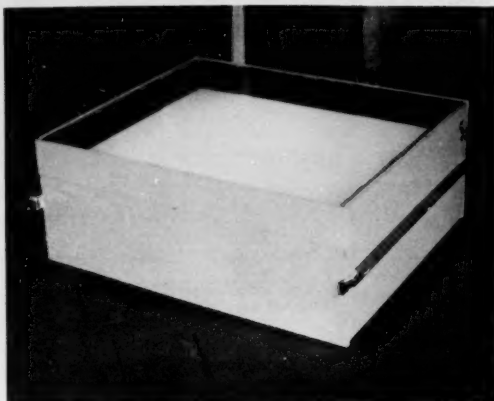


Fig. 2 - Light box prior to installation.

The combination of lighting and glass background eliminated shadows which are normally cast by the specimens when illuminated by photoflood lamps. Lights beneath the white-flashed opal glass diffused any shadows projected through the plate glass.

The photographic light box and photoflood lamps require 110-volt alternating current.

Materials required for the construction of the light box were:

$\frac{1}{2}$ -inch exterior grade plywood	48 by 30 inches
$\frac{3}{4}$ -inch exterior grade plywood	24 by 24 inches
$\frac{1}{4}$ -inch safety plate glass	22.5 by 26.75 inches
$\frac{1}{8}$ -inch white-flashed opal glass	22 by 26.5 inches
20-watt fluorescent light fixtures and bulbs	5 each
hinges, 2 by $\frac{1}{2}$ -inches	1 pair
eye hooks, $\frac{1}{2}$ -inches	1 pair
white paint	
black paint	
.020 sheet stainless steel	28 by 26 inches
electrical wiring	
flathead screws, No. 10 $\frac{1}{2}$ -inch	4 dozen
waterproof glue	

The cost of the materials was approximately \$70.00.

CONSTRUCTION

The bottom, $27\frac{1}{2}$ by 23 inches, and front and back, $27\frac{1}{2}$ by 9 inches, were cut from $\frac{1}{2}$ -inch plywood, and the two ends, 22 by 10 inches, from $\frac{3}{4}$ -inch plywood.

On the inner surface of the ends, a $\frac{1}{4}$ -inch deep by $\frac{1}{8}$ -inch wide dado was cut 3 inches from the top (fig. 3).

A $\frac{3}{8}$ -inch wide by $\frac{1}{4}$ -inch deep rabbet was cut on the top inside edge of the ends, and a

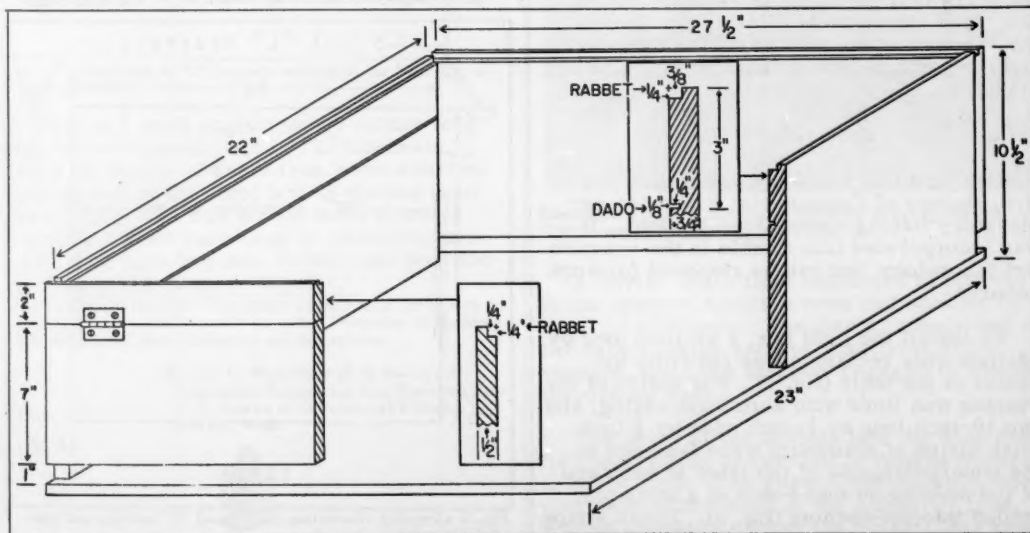


Fig. 3 - Drawing illustrating construction details.

$\frac{1}{4}$ -inch wide by $\frac{1}{4}$ -inch deep rabbet was cut on the top inside edge of the front and back pieces. After the rabbet was cut in the front piece, it was ripped into two parts, the top portion measuring $27\frac{1}{2}$ by 2 inches and the bottom portion measuring $27\frac{1}{2}$ by 7 inches.

Waterproof glue and No. 10, $1\frac{1}{2}$ -inch flat-head screws were used to secure each joint. All screw holes were drilled and screw heads were countersunk.

After the ends were attached to the bottom, the back and top portion of the front were secured to the ends (fig. 3). The lower portion of the front was hinged to the top piece and fastened to the ends with eye hooks.

The entire box was painted white except for the top inside 3-inch-wide portion above the dado, which was painted black. Then the inside of the box below the dado was lined with sheet stainless steel.

The light fixtures were equally spaced across the bottom of the box, secured in position, and wired in parallel. A $\frac{1}{4}$ -inch hole was drilled in one end of the box to allow passage of the wires to the outside, where they were connected to a light switch.

The safety plate glass was set into the rabbets at the top of the box, and the white-flashed opal glass was installed by sliding the glass into the dados in each end of the box. The hinged front allows easy access for removal of the opal glass for cleaning and for replacement of fluorescent bulbs and starters.

INSTALLATION

The light box was installed aboard the U. S. Bureau of Commercial Fisheries exploratory fishing vessel *John N. Cobb*. It was incorporated into a table in the vessel's wet laboratory, but can be removed for work ashore.

To install the light box, a 26-inch long by 22-inch wide rectangle was cut from the center of the table (fig. 4). The inside of the opening was lined with aluminum edging, and two 10-inch long by $\frac{3}{4}$ -inch wide by $\frac{1}{8}$ -inch thick strips of aluminum were fastened to the underneath side of the table at each end of the opening so that $\frac{3}{8}$ -inch of a strip protruded into the opening (fig. 5). These strips serve as supports for the removable center

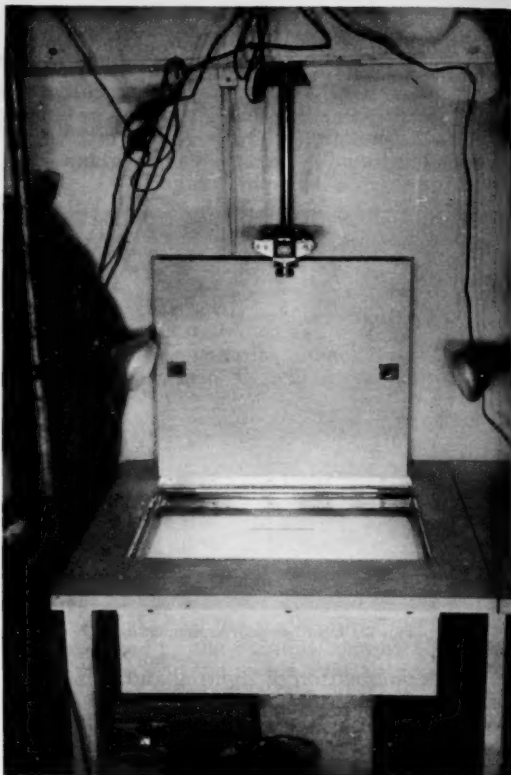


Fig. 4 - Light box installation aboard the M/V *John N. Cobb*.

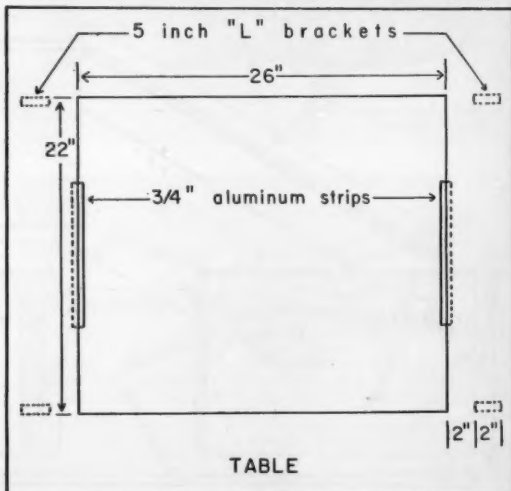


Fig. 5 - Drawing illustrating position of "L" brackets and aluminum strips.

portion of the table. When the light box is not being used, the removable section can be replaced, thus serving as protection for the plate glass photographic stage as well as restoring the table for other activities. Two ring handles were installed to facilitate removal of the top.

The light box was suspended from the table by "L" brackets and strips of angle iron. Two 5-inch "L" brackets were attached to the bottom of the table two inches from each end of the rectangular opening (fig. 5).

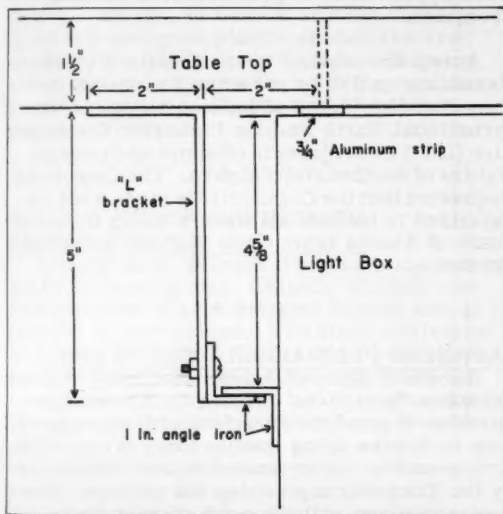


Fig. 6 - Illustration of "L" brackets suspending the light box beneath the table.

A strip of 1-inch angle iron 26 inches long was bolted to each pair of "L" brackets. Identical strips of angle iron were attached to each end of the light box 4 5/8-inches from the top (fig. 6). The strips form runners which facilitate installing or removing the unit. The light box was locked into position by bolting the runners together.

Note: Acknowledgment: The author would like to thank Ron Lopp of the Fisheries Research Institute, University of Washington, for his technical assistance and suggestions.

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Alaska

JAPANESE AND SOVIET FISHERIES IN BERING SEA AND GULF OF ALASKA:

The foreign fishing fleet build-up that had accelerated through April and May 1963 in the Bering Sea and Gulf of Alaska leveled off somewhat during June. The major increases were the arrival of the Japanese factoryship *Kaiko Maru* with 9 catcher vessels, to engage in the long-line fishery north of Unalaska Island, and the appearance of 3 Japanese whale factoryships in the Gulf of Alaska area. By month's end an estimated 180 to 200 Soviet and 210 to 215 Japanese vessels were believed to be fishing in the Gulf of Alaska and eastern Bering Sea.

The Portlock and Albatross Banks near Kodiak became the center of the major fishing effort by the Soviets during June. More than a dozen BMRT stern-ramp trawlers, including 7 or 8 new vessels of that type, and numerous new refrigerated fish transport and support vessels were identified. More than 100 conventional SRT type trawlers were sighted with the total fleet about 150 vessels in June.



Russian crab-canning factoryship operating in the Bering Sea. Home port of this vessel is Vladivostok.

A Soviet whale fleet continued to operate in the eastern Aleutian area and another in the Gulf of Alaska. The fleets, comprised of two factoryships and accompanying killer vessels, had been actively engaged in whaling throughout June.

The entry of the Soviets into the king crab fishing grounds of the Gulf of Alaska occurred in early June. The Pavel Chebotnyagin, Soviet crab factoryship of the *Zakharov* type, shifted operations from the Bristol Bay area into the Gulf of Alaska as had been predicted.

The vessel was sighted at 56.1°N., 154.8°W., near Chirikof Island. This class of vessel is ultra-modern with numerous unique features in processing equipment, is 531 feet long over-all, has a 65-foot beam, and carries a crew of 640 men and women. Observations were that the vessel was making excellent initial catches with tangle-net gear. Two additional vessels of that type, the Andrei Zakharov and the new Eugeni Nikishin were last reported fishing for king crab in the Bristol Bay area north of Port Moller. But by mid-July the Soviet king crab fleets had departed from the area south of Kodiak Island.

Japanese fishing efforts had largely leveled off during June. Three Japanese whale factoryships were operating south of the Kenai Peninsula, each accompanied by several killer and support vessels. Another whale fleet was in the western Aleutian Islands.

Six factoryships and 75 trawler-type vessels comprised the Japanese long-line fleet operating along the 100-fathom curve between Unalaska Island and the Pribilof Islands in the Bering Sea. The shrimp fleet consisted of 2 factoryships and 26 trawlers operating north of the Pribilof Islands.

Although the Japanese Government had authorized additional vessels to engage in fish meal and oil production in the eastern Bering Sea, only 1 factoryship and 30 trawlers had arrived on the fishing grounds by the end of June.

Two Japanese factoryships were fishing for king crab north of Port Moller in Bristol Bay. Those vessels, utilizing 4 trawlers and 16 "Kawasaki" picker boats, and operating in the same general area as the Soviet crab fleets, reported numerous gear conflicts and heavy losses.

Japanese exploratory efforts in the Bering Sea and Gulf of Alaska included the Akebono Maru 51 and 52, Taiyo Maru, Tenryu Maru, and Seiju Maru. Those vessels have generally been accompanied by an observer from the U. S. Bureau of Commercial Fisheries or the Canada Department of Fisheries. Nine Japanese salmon factoryships were identified in the western Aleutian area.

BIOLOGISTS AGREE ON DIXON ENTRANCE SALMON REPORTS:

One more step has been completed in the long procedure of clarifying questions regarding stocks of salmon, which are exploited by both Canadian and United States fishermen in the international boundary area around Dixon Entrance. The fourth meeting of the "Committee on Problems of Mutual Concern" was held on June 4, 1963, in Vancouver, B. C. Analyses of previous salmon tagging experiments, which had been exchanged this past year by Canadian and United States biologists, were approved by representatives of both countries.

A new development was the attention the Canadians called to recent tag captures by Canadian fishermen of salmon tagged by International North Pacific Fisheries Commission (INPFC) projects in offshore and coastal waters of Southeastern Alaska. The Canadians requested that the Committee's study area be expanded to include all waters along the outer coast of Alaska from Cape Spencer to Dixon Entrance.

JAPANESE PLAN ALASKA FISH PLANT:

Governor Egan of Alaska disclosed that a Japanese firm plans to form an Alaska corporation to produce a variety of fishery products in Alaska using mainly local labor. The firm would be incorporated under Alaska law by the Tokyo firm planning the venture. Preliminary plans call for cold-storage and curing shore operations at Bristol Bay, a mobile salt-curing barge, and a mobile fish-meal factory barge. The mobile barges would be used in Cordova, Kodiak, and Southeast areas.

Yearly production (involving 200 operating days) was estimated at some 1,390,000 tons of fishery products, which would go to markets in Japan and other Southeast Asian nations. The Bristol Bay plant and mobile barge are expected to employ 90 Alaskans and 8 Japanese. Additional operations by the Japanese call for "Dungeness crab farms" in the Prince William Sound area and the production of byproducts from seaweeds.

NEW FISHERY FIRM IN KENAI:

A new fishery firm was reported established in Kenai, Alaska. Their primary interest is in silver (coho) salmon but the operations

will not be limited to that species alone, and will include both fresh-water and marine fish. A minimum goal of 500,000 coho salmon is set for the remainder of this year.

DUNGENESS CRAB INDUSTRY AT METLAKATLA EXPANDS:

Pan American World Airways announced that its jet transportation service had opened up a new cooked crab meat industry in Alaska. Within four months, PAA has flown nearly 40 tons of cooked Dungeness crab from Metlakatla, Alaska, to Seattle and Honolulu. Specially designed plastic containers are used for the whole cooked crabs. Shipping rates for lots of more than 1,000 pounds are: 4 cents a pound to Seattle and 20 cents a pound to Honolulu.

SALMON FISHERMEN DEMAND HIGHER PRICES:

During June, salmon fishermen in certain areas of Bristol Bay, Chignik, Kodiak, and Southeastern Alaska stopped fishing and demanded higher prices. The final settlement in Bristol Bay provided for a two-year agreement with the fishermen to receive \$1.08 per red salmon this year and \$1.09 the next season. The agreement also provides for a 2-cent increase for pink salmon and 1 cent for chums. In the settlement of the price dispute (involving the seine-boat crewmen in the Icy Strait-Chatham Strait area), the Chatham, Hawk Inlet, and Excursion Inlet canneries will pay 26 cents a pound for reds, 98 cents a fish for cohos, 78 cents a fish for chums, and 38-52 cents a fish for pinks. There were indications in certain areas of Bristol Bay that the peak of the red salmon run may have occurred during the price dispute period, although there may also be something abnormal about the Bristol Bay run this year. Reports from Icy Straits indicated a tremendous run of pinks, with 2 boats landing about 25,000 fish each the first day of the open season. The State set the season to alternate 24 hours open and 24 hours closed, thereby allowing canneries to keep pace with deliveries.

FISHERY TRENDS AT KODIAK:

The fishery economy of Kodiak continued to expand in king crab and shrimp, with

salmon fast slipping from its earlier pre-eminent position in the Island economy. Kodiak is predominantly a pink salmon area and, because of last year's very successful season, neither the industry nor the fishermen were very interested in making price concessions (negotiations were hung-up between 44½ and 42 cents per pink salmon; other species prices were of minor concern).

The king crab fishery near Kodiak never really stopped during the 1963 molt season and the larger vessels were able to harvest offshore non-molting crabs at all times. Production during the month of June was expected to be one of the best months on record for the Port Wakefield crab processing plant.

In June, a shrimp processing plant in Kodiak was operating on a two-shift, 7-day-a-week schedule. A new shrimp plant affiliated with a cold-storage company was expected to be in production by the middle of July. A third shrimp plant is to be in operation by late fall.

ARA FUNDS REQUESTED FOR FISHERY RESEARCH:

Governor Egan of Alaska reported that he had submitted to the Area Redevelopment Administration (ARA) a request for a grant of over a million dollars for a fishery biological and oceanographic research center in Kodiak Alaska. Plans include an exploratory fishing and oceanographic research vessel. The Governor emphasized that the operations of the research center must be financed through research grants.



Alaska Fisheries Investigations

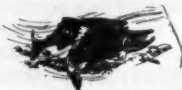
SALMON SPAWNING AREA CONTRACT NEGOTIATED WITH UNIVERSITY OF ALASKA:

The Branch of River Basin Studies, U. S. Bureau of Sport Fisheries and Wildlife, has negotiated a contract with the Wildlife Department of the University of Alaska to determine the location of salmon spawning areas in the Chena River and to determine factors affecting egg success deposited in such areas. The contract is augmented by a grant from the National Science Foundation to the University for related investigations. Data obtained from this contract will be of vital importance

in determining feasibility of fish passage or the type of artificial propagation facility to be recommended on the Chena Flood Control project proposed by the Corps of Engineers near Fairbanks, Alaska.

UGASHIK RED SALMON SMOLTS HIGHEST ON RECORD:

Over 28 million red salmon smolts were estimated to have left the Ugashik system by mid-June 1963. This is over twice as many as a year ago which was also a record year. The 2.5 million adult spawning escapement in 1960 contributed heavily as two-check migrants to this year's production, and including the one-check fish, that brood year has produced over 27 million smolts or twice as many as those produced by any other brood year. This is considered important information on the general question of what constitutes an optimum escapement for a given system.



California

PELAGIC FISH POPULATION SURVEY CONTINUED:

Airplane Spotting Flight 63-6-Pelagic Fish (June 12-13, 1963): To determine the inshore distribution and abundance of pelagic fish schools, the inshore area from the United States-Mexican Border to Halfmoon Bay, Calif., was surveyed from the air by the California Department of Fish and Game's Cessna "182" 9042T. Adverse weather limited flying time to only 2 of the 4 days originally scheduled.

The area between Point Dume and the United States-Mexican Border was surveyed on June 12. Of 243 anchovy schools observed, 196 were small schools in Los Angeles-Long Beach Harbor. Flights over the harbor area were made at 11:30 a. m. and 3:45 p. m. Pacific Daylight Time. Weather and water conditions were about the same on both flights. On the first transect at 11:30 a. m. not one fish school was sighted. Changes in fish behavior probably account for the "sudden appearance" of anchovy schools on the 3:45 p. m. flight. Changes in the angle of the sun did not appreciably alter scouting conditions.

Twelve anchovy schools were observed in Santa Monica Bay, 2 off Torrey Pines, and

33 between Coronado and the United States-Mexican Border.

Four jack mackerel schools were sighted between San Mateo Point and the Santa Margarita River. Two lampara boats were making sets on fish schools in the immediate vicinity. Interviews with the fishermen revealed that one vessel caught nothing and the other landed 5 tons of jack mackerel.

Three sardine schools were seen off Torrey Pines; 20 other fish schools in the area could not be identified.

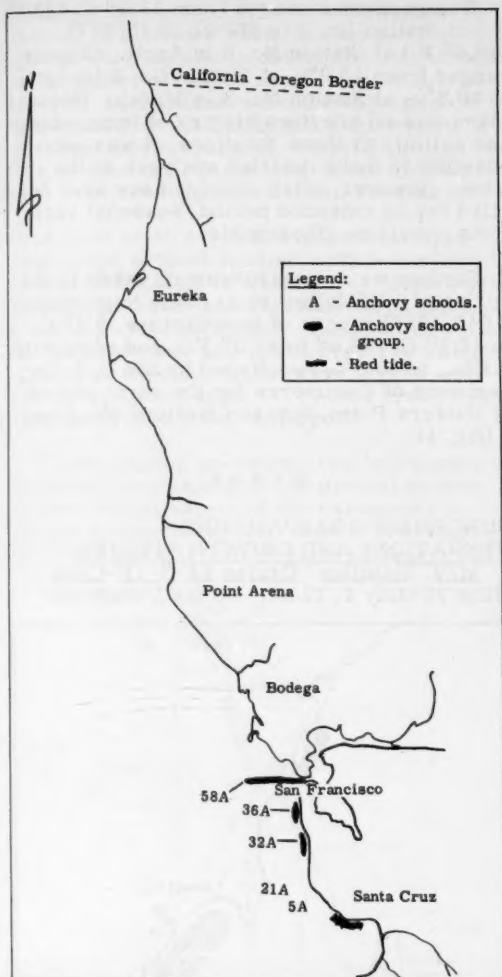
On June 13, the area between Halfmoon Bay and Point Vicente was surveyed when 252 anchovy schools and 1 unidentified school were sighted. Most of the anchovy schools were contained in three school groups. A school group off Cayucos contained 35 schools, 95 were in a loosely-knit group between Oceano and Mussel Point, and 83 were between Goleta Point and Santa Barbara.

Airplane Spotting Flight 63-7-Pelagic Fish: The area from the United States-Mexican border to the California-Oregon border was surveyed on July 8-11, 1963.

On July 8, the coast between Point Conception and the United States-Mexican border was surveyed. Only 26 anchovy schools were observed and none of those were in the Los Angeles-Long Beach Harbor area. The results of that day's survey are noteworthy because most of the bait fishery fleet was operating in that area.

Six anchovy schools off North Island and 5 schools near Coronado Strand were being fished by commercial bait craft in the San Diego area. One anchovy school was seen off Oceanside, and 10 more were observed off Carlsbad. Four unidentified schools were spotted off La Jolla Point. A four-mile long reddish brown bloom was seen off Dana Point.

On July 10, cloud banks prevented aerial survey of the coast between Long Beach and Point Sur, but the region between Point Sur and the California-Oregon border was surveyed. Of 152 schools seen, 58 were observed west of the Golden Gate Bridge. That school group exceeded all the rest in total area and ranged from the Farallon Islands to the Golden Gate.



Airplane Spotting Flight 63-7-Pelagic Fish (July 8-11, 1963).

On the same day, 5 anchovy schools were observed off Point Ano Nuevo, 21 were seen off Pidgeon Point, 32 in Half Moon Bay, 4 off San Pedro Point, and 32 schools were observed off Rockaway Beach. An extensive red tide was seen in the Santa Cruz Harbor area. Thirteen bright yellow-green schools of jellyfish were spotted. Most of the larger schools exhibited diploid population concentration centers.

On July 11, clouds prevented survey of the region between San Francisco and Long

Beach. On the same day, the area between Eureka and San Francisco Bay was observed. Twenty-six schools of anchovies were seen north of Dumbarton Bridge in San Francisco Bay. Heavy cloud banks prevented any more surveying that day.

No schools of other species were seen on any of the three days of surveying. Red tides were much less in evidence than on previous aerial surveys.

Note: See Commercial Fisheries Review, August 1963 p. 19.

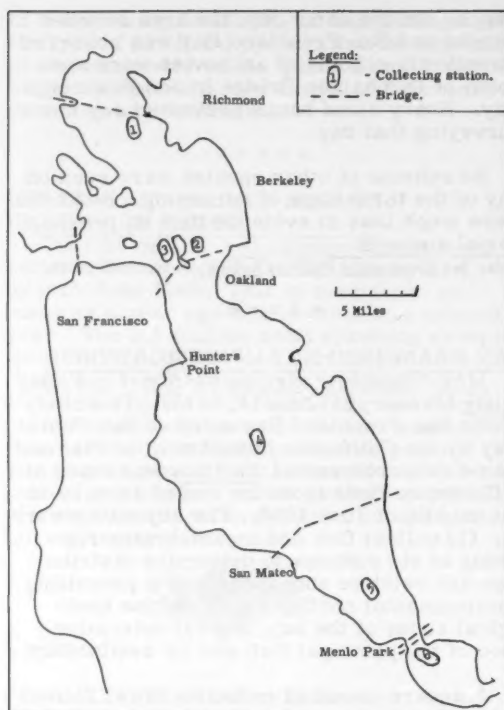
SAN FRANCISCO BAY INVESTIGATIONS:

M/V "Nautilus" Cruise 63-N3a-f S. F. Bay Study (January 31-June 14, 1963): This study of the San Francisco Bay south of San Pablo Bay by the California Department of Fish and Game research vessel Nautilus was made at different periods from the end of January to the middle of June 1963. The objectives were to: (1) collect fish and invertebrates routinely at six stations to determine distribution and relative abundance under prevailing environmental conditions, (2) define ecological zones of the bay, and (3) determine food of the principal fish and its availability.

A square-mouthed midwater trawl 25 feet on a side was towed for 20 minutes at the surface. Each of six stations was also sampled by a 15- to 20-minute bottom tow with a beam-trawl net 10 feet wide and 4 feet high with 1-inch mesh.

Samples of the bottom with its shallow burrowing fauna were brought up with a 100-cubic-inch orangepeel dredge. Those benthos samples were frozen for later sifting and identification of material. A sample was also taken at each station for San Jose State College, for their study of San Francisco Bay bottom materials. Plankton was taken with a $\frac{1}{2}$ -meter net having 28 meshes per inch. Each plankton tow lasted 20 minutes and the material was preserved for classification by San Jose State College.

Temperature and salinity measurements were taken from both surface and bottom water where the depths were sufficient to make a measurable difference. At shallow stations only surface observations were made. Bottom water samples were collected with a modified Eckman bottle secured to the orangepeel dredge line 2 feet above the dredge. Temperature was measured to 0.1°C . (33.8°F .) and salinity to 0.1‰ .



Shows collecting stations during San Francisco Bay Study by M/V Nautilus.

Over 15,000 fish of 37 different species and several species of crustaceans were taken during February-April. Anchovies (*Engraulis mordax*), herring (*Culpea pallasi*), and shiner perch (*Cymatogaster aggregata*) were taken in greatest numbers. Bay shrimp (*Crago* sp.) were caught at all stations.

Bottom-dwelling invertebrates were taken incidentally in the beam trawl. Those invertebrates and those taken in the bottom samples represent several phyla. The polychaetes, pelecypods, gastropods, and some of the crustacea are elements of the food chain in the Bay. It will take much more time and effort to disclose the interrelationships between the many forms of vertebrates and invertebrates.

The records of a few cruises show that much of San Francisco Bay is not a biological desert. A biological community exists which represents a tremendous potential for utilization by both sport and commercial interests.

Temperatures ranged from 11.9° C. (53.4° F.) at Station No. 3 in March to 15.6° C. (60.6° F.) at Station No. 6 in April. Salinity ranged from 13.9‰ at Station No. 1 in April to 29.8‰ at Station No. 3 in March. Because there was no previous history of temperature and salinity at those locations, it was not possible to make detailed analyses at the time. However, after records have been compiled for an extended period, seasonal variations should be discernable.

Surface water measurements taken in the spring of 1963 follow closely the long-term (1945-1956) ranges of temperature, 9.4° C. to 16.1° C. (49.0° to 61.0° F.), and of salinity, 9.4‰, to 28.8‰, published by the U. S. Department of Commerce for the same period at Hunters Point, between Stations No. 3 and 4 (fig. 1).

DUNGENESS CRAB TAGGING OPERATIONS AND GROWTH STUDIES:

M/V "Nautilus" Cruise 63-N-1F-Crab
(June 23-July 8, 1963): To tag Dungeness

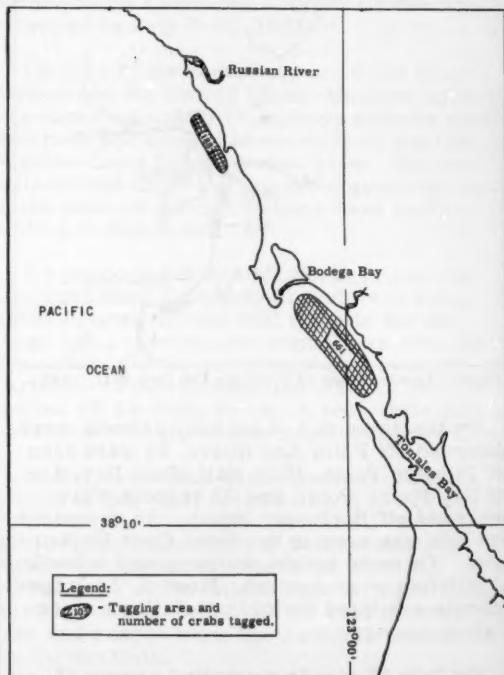


Fig. 1 - Shows crab tagging areas during M/V Nautilus Cruise 63-N-1F (June 23-July 8, 1963).

crab (*Cancer magister*) 130 millimeters (5.1 inches) in shoulder width and larger for growth studies, and to determine recruitment to the fishery from sublegal components of the crab populations were the objectives of this cruise by the California Department of Fish and Game research vessel *Nautilus*. The area of operations was in the coastal waters off Bodega Bay and San Francisco.

A total of 60 40-inch commercial-type crab traps without escape ports were fished in 6 to 20 fathoms of water. The traps were baited with squid and rockfish carcasses and allowed to fish overnight. Traps were pulled the following day and crabs over 130 millimeters in shoulder width were tagged with plastic spaghetti tags. Very soft crabs were returned to the water untagged.

In the tagging operation, two holes were punched $\frac{3}{8}$ -inch apart in the pleural groove on the ventral aspect of the carapace. A plastic spaghetti tag was threaded through the holes using a curved suture needle. This

placement of the tag is for maximum retention when the pleural groove opens during molting. Crabs were returned to the water immediately after tagging. One group of 200 tagged crabs was held overnight in a live box to determine mortality; one crab died.

A total of 2,299 male Dungeness crabs were tagged on this cruise. They ranged from 125 to 195 millimeters (4.9 to 7.7 inches) in shoulder width. Most were 135 to 165 millimeters (5.3 to 6.5 inches) wide.

The principal tagging locations were just south of the Russian River, Bodega Bay, Drakes Bay, and between Bolinas and San Francisco (figs. 1 and 2).

Trawling was conducted for one day off San Francisco to collect samples for the crab growth study. Good samples of the 1962 year-class were obtained. Individuals from that year-class ranged from 37 to 99 millimeters (1.5 to 3.9 inches) in shoulder width at the time taken.

Note: See *Commercial Fisheries Review*, March 1963 p. 20.

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PELAGIC FISH POPULATION SURVEY CONTINUED:

M/V "Alaska" Cruise 63-A-3-Pelagic Fish (May 10-June 1, 1963): The objectives of this cruise were to: (1) survey the pelagic environment of Northern California, (2) continue comparing catches of night light and midwater-trawl stations, (3) obtain live sardines from Monterey Bay for blood genetic and morphometric studies. The area of operations was in the coastal waters of California between Crescent City and Point Reyes, and the Monterey Bay area.

The cruise was made by the California Department of Fish and Game research vessel *Alaska*. The results are presented as three separate studies: (a) midwater trawl survey of the area between Crescent City and Point Reyes, (b) a light station survey of select sections within that area, and (c) a special light-station survey of the Monterey Bay area.

MIDWATER-TRAWL SURVEY: A total of 31 midwater-trawl tows were completed. Most of them were made with the net at 50-foot depths, although depths as great as 1,000 feet were tried. Most tows were made in less than 80 fathoms of water and within 10 miles

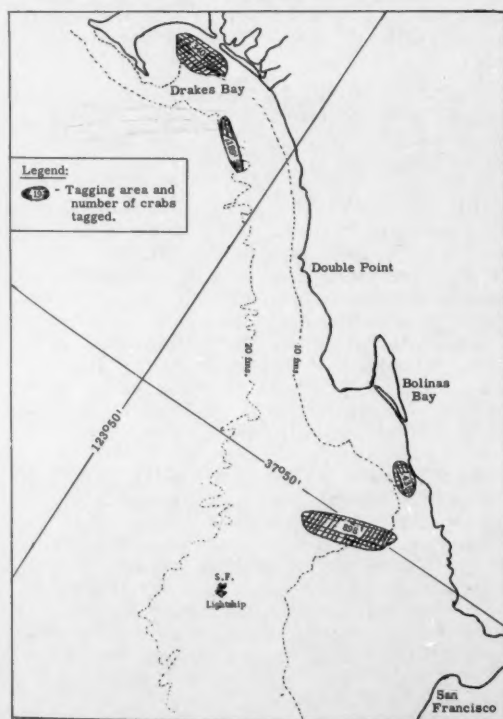


Fig. 2 - Shows crab tagging areas during M/V *Nautilus* Cruise 63-N-1F (June 23-July 8, 1963).



M/V Alaska Cruise 63-A-3-Pelagic Fish (May 10-June 1, 1963).

of shore. Seven of the 31 tows were made at night. The catches of the more important species were:

Salmon: Juvenile salmon (1 to 12 fish) were caught in 6 tows. The smallest and largest ones (3.2 to 13.3 inches long) were caught off Bodega Bay. The most interesting catch was made off Fort Bragg. Five of 12 salmon in a tow had been marked by removal of the adipose fin and a portion of the right maxillary bone. The marked fish were 5 to 10.4 inches long. Four unmarked salmon were taken in 3 tows between the Klamath River and Trinidad Head.

Herring: Pacific herring (*Clupea pallasii*) were caught at nine stations throughout the survey area. At seven of the stations, catches were small, ranging from 1 to 59 fish. In the remaining two tows (one a night tow off Point Arena, the other an afternoon tow south of Bodega Bay), 2,000 and 4,000 fish, respectively, were caught. Most of the herring were adults ranging from 5.1 to 7.5 inches long.

Hake: Pacific hake (*Merluccius productus*) were caught in more tows (10) than any other species. In six tows, the catches were small,

varying between 1 and 49 fish, mostly large adults. In the other four tows, however, catches of from 600 to 6,000 juveniles (about 10.2 to 11.8 inches long) were made. Those large catches, plus three smaller catches, were made between Stewart's Point and Point Reyes. The three other successful stations were off Eureka.

Osmerids: Surf smelt (*Hypomesus pretiosus*) were caught in six tows; the three largest catches were made between Crescent City and the Klamath River. These were mostly 5.1 to 6.7 inches long. Whitebait smelt (*Allosmerus elongatus*) were taken in six tows in amounts ranging from 4 to 10,000 fish. The three best tows were made off Eureka. Those fish were smaller than the surf smelt, ranging from about 2.6 to 4.3 inches long.

Mackerel: Three large jack mackerel (*Trachurus symmetricus*) taken in two tows off Bodega Bay were the only mackerel taken. They were 19.1 to 20.7 inches long.

Anchovies: Anchovies (*Engraulis mordax*) were taken in only 2 tows: a single fish just south of Eureka, and 4 fish in a tow off Bodega Bay.

Larval Flatfish: Larval stages of several flatfish (*Citharichthys* sp., *Glyptocephalus zachirus*, *Microstomus pacificus*, particularly) were common in the tows.

LIGHT STATION SURVEY: Fifteen 1-hour light stations were occupied between Redding Rock and Shelter Cove, and 5 between Walsh Landing and Bodega Bay. Light stations were generally unsuccessful in both areas. In the northern area the only fish attracted were small whitebait smelt. In the Bodega Bay area, herring, surf smelt, whitebait smelt, and a single anchovy were attracted on one station. No schools were sighted during 116 miles of night scouting between stations.

MONTEREY BAY AREA LIGHT STATIONS: Although Monterey Bay was not within the cruise area, the potential value of sardine samples from that area warranted a special effort. Thirteen ½-hour light stations were occupied in the bay on the last two nights of the cruise. The only fish attracted were anchovies, which came to the light at two stations. No sardines were located. This area will be more thoroughly covered on cruise 63-A-4.

A total of 36 anchovy schools was sighted in Monterey Bay during 45 miles of night scouting between stations.

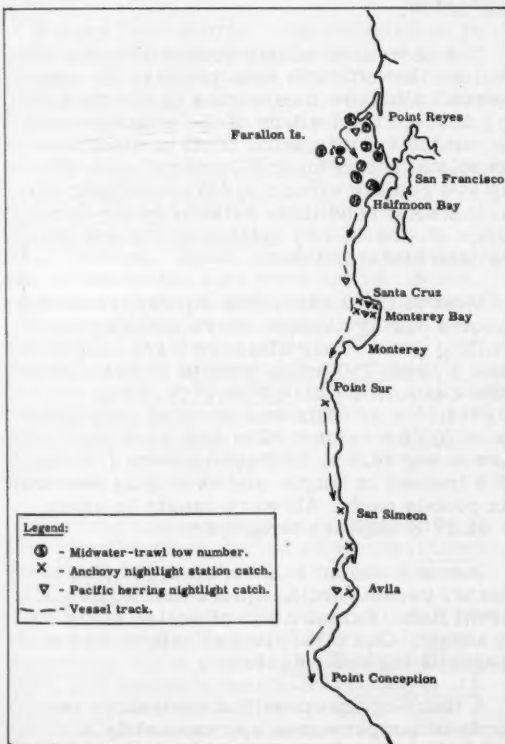
The weather during the entire cruise was very good for the area and time of year, although working conditions were frequently far from ideal. Sea surface temperatures ranged from 49.6° F. off Cape Mendicino to 57.9° F. off Eureka.

M/V "Alaska" Cruise 63-A-4-Pelagic Fish (June 12-July 1, 1963): The objectives of this cruise were to: (1) survey the fish and invertebrates in the pelagic environment of central California using a midwater-trawl and nightlight-blanket net gear, (2) obtain live sardines (*Sardinops caeruleus*) for sub-population studies, and (3) further evaluate the midwater-trawl as a sampling device for pelagic fish species.

MIDWATER TRAWLING: Due to loss of gear, only 11 tows were made (all between

Point Reyes and Halfmoon Bay). Operations were greatly hampered by extensive concentrations of jellyfish. Tows were made in the upper 20 fathoms of water in areas where the bottom was at depths of 15 to 100 fathoms. All tows except one were made during daylight hours.

Pacific herring (*Clupea pallasii*), medusa fish (*Icichthys lockingtoni*), postlarval Pacific tomcod (*Microgadus proximus*), jacksmelt (*Atherinopsis californiensis*), and king salmon (*Oncorhynchus tshawytscha*) comprised the bulk of the fish catch. Jellyfish were taken in large quantities on all tows and caused extensive damage to the net on one occasion. Pacific herring were caught in the greatest quantities. They were taken in 6 of the 11 tows in quantities up to 400 fish. Sizes ranged from 53 to 180 millimeters (2.1 to 7.1 inches). Small medusa fish under 125 millimeters (4.9 inches) were present in 7 tows. King salmon were taken in 4 tows in catches ranging from 2 to 7 fish. They ranged from 87 to 572 millimeters (3.4 to 22.5 inches) standard length with most exceeding 300 millimeters (11.8 inches). Squid (*Loligo opalescens*) were taken in 3 tows on the more offshore stations. Complete trawl catches are shown in table.



Shows operations of M/V Alaska Cruise 63-A-4 (June 12-July 1, 1963).

Tow No.	Herring	Medusa-fish	Jack-Smelt	King Salmon	Pacific Tomcod	Squid	Anchovy	Other
1	2	2	1	-	10	-	-	1
2	6	1	-	-	4	-	-	-
3	400	3	-	3	-	45	-	-
4	-	-	6	-	-	-	-	1
5	-	3	2	-	-	-	-	1
6	-	-	-	-	-	500	-	-
7	-	-	1	7	1	-	-	50
8	300	-	-	-	-	-	500	-
9	-	2	-	5	1	100	-	1
10	13	3	1	2	10	-	1	1
11	51	3	-	-	-	-	-	2

1/Indicates night tow.
 "Other" includes California pompano (*Palometa simillima*), surf-smelt (*Family osmeridae*), rockfish (*Family scorpaenidae*), electric ray (*Torpedo californica*), larval flatfish (*Bothids* and *Pleuronectids*) and starry flounder (*Platichthys stellatus*).

NIGHTLIGHT-BLANKET NET STATIONS:

A total of 48 nightlight stations were occupied--nearly half of them in Monterey Bay. Periods of adverse sea conditions reduced their efficiency from Santa Cruz southward. Almost the entire catch was comprised of anchovies (*Engraulis mordax*) and Pacific herring. Anchovies were taken on 8 stations and Pacific herring on 5. The number of successful anchovy stations, however, is not indicative of their distribution and density. In the 300 miles the vessel scouted, a total of

263 anchovy schools were observed, 200 of them between Santa Cruz and Halfmoon Bay. Nightlight stations were totally unsuccessful in that area.

Anchovies were caught in widely scattered areas from Santa Cruz to Avila. Almost the entire catch was made up of large adults ranging from 125 to 158 millimeters (4.9 to 6.2 inches).

Predation by adult anchovies on postlarval anchovies was observed on two occasions. Adults measuring 125 to 150 millimeters (4.9 to 5.9 inches) standard length were seen feeding on postlarvae attracted to the night light. Stomach inspection of collected adults verified the observations.

Almost the entire Pacific herring catch was taken between Point Reyes and Monterey. Large jacksmelt were present on many stations and counted from 1 to 10. Squid appeared under the light in huge schools near Monterey Harbor. No sardines were caught or observed.

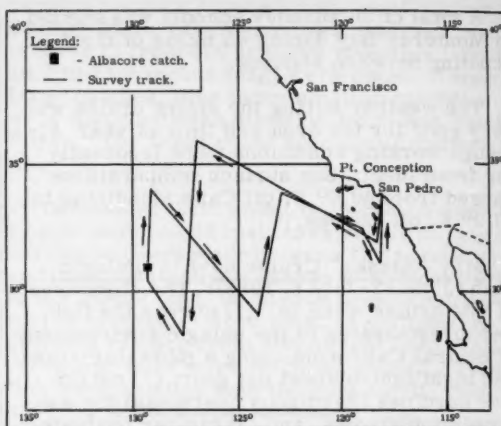
In areas where both midwater trawling and nightlighting were conducted, the trawl was much more effective in collecting the pelagic species. With optimum conditions prevailing, nightlighting resulted in a single catch of Pacific herring in contrast to the variety and quantity taken by the trawl. If the trawl had been used over the entire cruise, it would have sampled the extensive anchovy concentrations missed by the nightlight. Another evident advantage of the trawl is the wide range of weather conditions in which it can be operated.

Weather conditions were excellent during the first week of the cruise, but the remainder of the cruise was hampered by intermittent periods of bad weather. Sea surface temperatures ranged from 50° F. at Point Sur to 61.2° F. in Monterey Harbor.

Note: See *Commercial Fisheries Review*, February 1963 p. 18.

ALBACORE TUNA MIGRATION STUDIES AND TAGGING:

M/V "N. B. Scofield" Cruise 63-S-4-Albacore (May 23-June 21, 1963): Intercepting albacore tuna schools and collecting biological data was the mission of the California Department of Fish and Game research vessel N. B. Scofield during this cruise. The



Cruise (63-S-4-Albacore) of the research vessel N. B. Scofield to study migrations and collect biological data related to albacore tuna.

vessel operated in the high seas off California and northern Baja California between latitudes 28° and 36° N. and offshore to longitude 129°30' W.

The objectives of this cruise were to: (1) explore that offshore area prior to the commercial albacore tuna season in an attempt to intercept the leaders of the migration and determine the migration route of albacore schools approaching the Pacific Coast; (2) tag and release albacore; (3) investigate environmental conditions relating to the occurrence of albacore by collecting various physical and biological data.

Most of the 3,100-miles survey track was scouted during daylight hours using surface trolling gear. Four albacore were caught on June 5 about 780 miles west of Cape Colnett, Baja California (lat. 30°39.0' N.; long. 129°14.5' W.). This was the total albacore catch for the cruise. The fish were small, measuring 49.0 to 51.5 centimeters (19.3 to 20.3 inches) in length, and averaging less than six pounds each. All were caught in water of 64.2° F. surface temperature.

Stomach contents of the untagged fish indicated recent feeding upon small squid and larval fish. Examination of scales revealed no annuli. One albacore was tagged with a spaghetti tag and released.

A thermograph provided continuous records of temperatures approximately six feet below the sea surface. Surface tempera-

tures also were obtained at intervals with a bucket thermometer. Sea surface temperatures encountered along the vessel track ranged from 57.2° F. (14.0° C.) to 65.4° F. (18.6° C.). Sea temperatures suitable for albacore were found throughout most of the survey area.

A total of 81 bathythermograph (BT) casts to a depth of 450 feet were made at approximately 40-mile intervals throughout the survey. During the first half of the cruise they were read, coded, and forwarded to the National Oceanographic Data Center by way of Scripps radio WWD.

Nansen bottle casts to 10-meter (about 33 feet) depths were made at bathythermograph stations. A water sample for salinity determination was obtained at 74 BT stations.

Weather observations were recorded at 6-hour intervals throughout the cruise. These were forwarded to the U. S. Weather Bureau via Scripps' radio WWD.

A night light station was occupied on 14 occasions while the vessel drifted on sea anchor. At every station, Pacific sauries (*Cololabis saira*) were observed in numbers from 4 or 5 small individuals to schools of several hundred fish. Four species of lanternfish (*Myctophum affine*, *M. californiense*, *Tarletonbeania crenularis*, *Centrobranchus nigro-ocellatus*) and juvenile jack mackerel (*Trachurus symmetricus*) were taken at many stations. Squid, amphipods, heteropods, and coelenterates also were netted. Some adult jack mackerel and immature blue shark (*Prionace glauca*) were caught on hook and line at offshore drift stations. Several species of rockfish (*Sebastes serripes*, *S. flavidus* and *S. paucispinis*), Pacific whitefish (*Caulolatilus princeps*), sharpnose sea perch (*Phanerodon atripes*), and one mola (*Mola mola*) were caught while the vessel was anchored on Cortez Bank.

Daytime observations were logged frequently. The black-footed albatross (*Diomedea nigripes*) was the most common bird sighted offshore. One of them was netted, tagged, and released. On several occasions specimens of Beal's petrel (*Oceanodroma leucorhoa*), black petrel (*Oceanodroma melanura*), and Xantus's murrelet (*Endomychura hypoleuca*) flew aboard the vessel. Pilot whales, California sea lions, and porpoises also were observed on several occasions.

Three Pacific bonito (*Sarda chiliensis*) were caught on trolling lines near Cortez Bank and one dolphin (*Coryphaena hippurus*) was caught near the albacore-catch area. At several localities along the vessel track, concentrations of the siphonophore (*Velella lata*) were observed, and large numbers of Japanese glass net floats were seen in many offshore areas.

INVESTIGATION OF FISH LOSSES FROM DDT-TREATED IRRIGATION WATER:

A two-phase study aimed at controlling conditions which led to fish kills during the spring of 1963 in sloughs north of Sacramento, Calif., has been started by the California Department of Fish and Game in cooperation with State agricultural agencies and rice farmers. It was thought that the fish losses were caused by the discharge of rice irrigation waters which had been treated with DDT. The tests have led to recommendations by the California Agricultural Extension Service that farmers hold DDT-treated water on their rice fields for five days before allowing it to flow into sloughs, drainage ditches, or other waters.

The second phase of the study consists of a new series of tests to further investigate the DDT problem, as well as to explore the use of other chemicals for pest control on rice fields. Investigators hope to find a substitute for DDT which will eliminate the problem of possible residue buildup in wildlife. (California Department of Fish and Game, July 13, 1963.)

Note: See *Commercial Fisheries Review*, August 1963 p. 21.



Central Pacific Fisheries Investigations

OCEAN CURRENT STUDIES IN CENTRAL NORTH PACIFIC AIDED BY PARACHUTE DROGUES:

M/V "Charles H. Gilbert" Cruise 66 (LANAAU II) (June 7-23, 1963): A previously undescribed subsurface current feature of the North Pacific Ocean (which had been predicted from prior station and bathythermographic data) was confirmed by means of drogue studies and station data during this cruise. This new feature is associated with density gradients between the North Pacific Central and Equatorial water masses in the region 16° N. and 153°30' W.

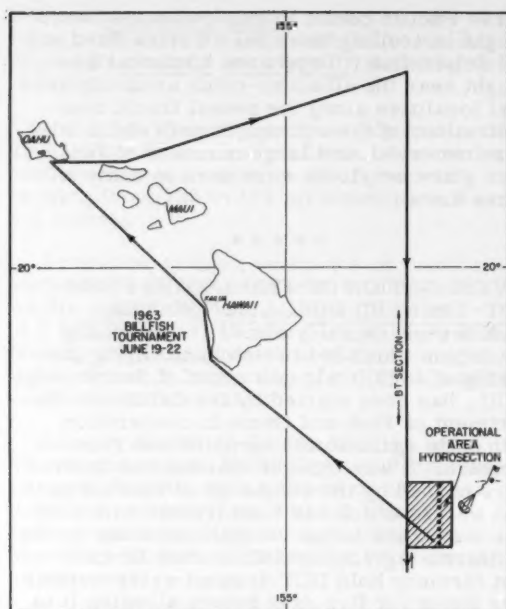


Fig. 1 - Charles H. Gilbert Cruise 66 (Lanaau II) cruise track, June 7-23, 1963.

The area of operations during this cruise by the Charles H. Gilbert, research vessel of the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu, was along longitude $153^{\circ}30'$ W. between latitudes $22^{\circ}00'$ and $15^{\circ}22'$ N. The specific missions undertaken were to:

1. Investigate the physical nature of the subsurface boundary between the North Pacific Central and Equatorial water masses.
2. Determine the current structure within the boundary zone by means of parachute drogues.
3. Conduct, weather permitting, experiments with current crosses to determine (a) the current shear within the mixed surface layer, and (b) the deflection of the surface current (upper 3m.) in relation to the prevailing winds.
4. Obtain simultaneous Carbon-14 productivity measurements for samples incubated on deck, in a light bath, and *in situ*.

Nine hydrographic casts to 300 meters (984 feet) were made across the subsurface

water mass boundary at intervals of 10 miles. The vertical sampling interval was determined from the character of the bathythermograph (BT) trace obtained prior to making each cast. In addition to the hydrocasts, a six-bottle cast was made to 300 meters each day at noon. Those data have not yet been processed but the final result should be the most detailed section yet obtained through the subtropical thermocline. In addition to the hydrographic section, two BT sections were obtained. The first one was obtained on the southbound leg of the cruise, and was used to locate the anticyclonic structure of the isotherms which denotes the presence of the subsurface water mass boundary. The second BT section was obtained concurrent with the hydrographic section. Figure 1 shows the vessel's cruise track and the location of the hydrographic section.

A subsurface current moving northeast in the generally west-flowing North Pacific Equatorial Current was measured by a parachute drogue set at a depth of 350 feet. This depth coincides with the core layer of the subtropical salinity maximum. The net speed of the current after a 5-day drift period was on the order of 5 miles a day. Figure 2 shows the plot of the drift. The parachute apparently became detached during the second to the last day as evidenced by the strong westerly drift. That drogue was reset but the resulting drift was not definitive due to apparent malfunctioning of the opening device attached to the apex of the parachute.

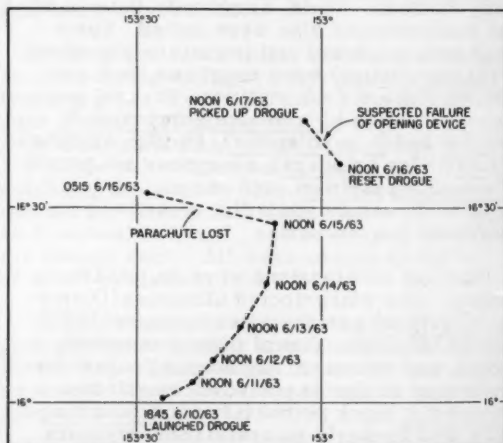


Fig. 2 - Drift of parachute drogue set at a depth of 350 feet (June 10-17, 1963), Charles H. Gilbert Cruise 66.

In addition to the drogue observations, a set of direct current observations were obtained with an Ekman current meter. These data have not yet been corrected for the vessel's drift. It is hoped that from these data at least a relative profile of the current system can be obtained. Other than the Ekman current observations, no attempts were made to investigate the current shear within the mixed layer or the deflecting effect of the wind due to the partial failure of the vessel's radar.

Carbon-14 primary productivity measurements were obtained for comparison between samples incubated on deck and those incubated in situ. The in situ samples were suspended on a light nylon line attached to a free floating buoy. The results of this study are currently being analyzed by the University of Hawaii's Botany Department.

Other activities during the cruise were:

1. A total of 260 drift cards were released.
2. The thermograph was operated continuously. No marked temperature fronts were encountered.
3. The barograph was operated continuously and standard marine weather observations were recorded and transmitted four times daily.
4. A standard watch for bird flocks and fish schools was maintained during daylight hours. Only four bird flocks were sighted and those were all within close proximity of land.
5. Two standard lures were trolled during daylight hours. The total catch consisted of 6 dolphins (*C. hippurus*), 1 skipjack tuna, and 1 wahoo.
6. BT casts were made at 3-hour intervals throughout the cruise. A surface salinity sample was obtained at each cast.
7. From June 11 through June 17 the sea-surface temperature, wet-dry bulb temperatures, and the atmospheric pressure were recorded at hourly intervals.

Note: See Commercial Fisheries Review, August 1963 p. 21.

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SEASONAL DISTRIBUTION OF YOUNG ALBACORE TUNA DETERMINED BY STUDY OF PREDATORS' STOMACHS:

As part of the albacore ecology program, the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu, Hawaii, has been regularly examining the stomach contents of large pelagic fish landed at the Honolulu fresh fish market, and those taken on cruises of the Laboratory's research vessel, the *Charles H. Gilbert*. A major purpose of the observations is to monitor the occurrence of juvenile tuna, particularly juvenile albacore. It has been shown that such large predatory fish as the marlins provide one of the best available sources of juvenile tuna specimens.

The fresh fish markets in Honolulu are supplied by a fleet of tuna long-line boats and provide a continuous source of material for the study. It is possible, therefore, to obtain an idea of the seasonal occurrence and abundance of juvenile tuna around Hawaii by examining the stomachs of the large predatory fish that are landed at the markets throughout the year. Since the inception of the Laboratory's sampling program, a full year's data have been collected. Although the number of juvenile albacore found to date is small, there are already some interesting indications. The five juvenile albacore that have been collected were taken from predators landed at the local markets during the months of August-November. These findings corroborate the results of previous studies of albacore spawning based on gonad condition, which indicated that albacore spawn around Hawaii during the summer.

Those specimens and several other juvenile albacore found in the stomachs of predators caught elsewhere in the Pacific Ocean have made it possible to describe the development of certain morphological features of the skeleton of albacore. For example, the angle that the rear edge of the skull makes with the line of the vertebral column is small in adult albacore, but it has been found that this angle is much greater in juveniles and gradually changes as the fish approach adulthood.

The examination of the stomachs of predators is a continuing program. As more juveniles are recorded, other facets of the biology of the albacore will be explained, including growth during the early stages of its life.

Note: See Commercial Fisheries Review, March 1963 p. 22.

Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-FEBRUARY 1963:

Fresh and Frozen: For the use of the Armed Forces under the Department of Defense, less fresh and frozen fishery products were bought in February 1963 by the Defense Subsistence Supply Centers than in the previous month. The decline was 6.0 percent in quantity and 30.9 percent in value. The purchase of 737,817 pounds of shrimp in January 1963 resulted in an exceptionally high average price of 74.0 cents per pound for purchases in that month. Purchases in February 1963 had an average value of 54.4 cents per pound, and included 394,526 pounds of shrimp, 323,092 pounds of ocean perch fillets, 285,920 pounds of flounder fillets, 245,000 pounds of scallops, 233,040 pounds of haddock fillets, and 147,515 pounds of halibut. The February 1963 purchases also included considerable quantities of cod fillets, oysters, clams, sole fillets, and salmon.

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, February 1963 with Comparisons

QUANTITY				VALUE			
February		Jan.-Feb.		February		Jan.-Feb.	
1963	1962	1963	1962	1963	1962	1963	1962
..... (1,000 Lbs.) (\$1,000)			
1,964	1,089	4,053	2,840	1,068	794	2,614	1,790

Compared with the same month a year earlier, purchases in February 1963 were up 80.3 percent in quantity and 34.5 percent in value. During the first 2 months of 1963, purchases were up 42.7 percent in quantity and 46.0 percent in value from those in the same period of 1962.

Canned: Canned sardines were the principal canned fishery product purchased for

Table 2 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, February 1963 with Comparisons

Product	QUANTITY				VALUE			
	February		Jan.-Feb.		February		Jan.-Feb.	
	1963	1962	1963	1962	1963	1962	1963	1962
..... (1,000 Lbs.) (\$1,000)			
Tuna	10	-	10	3,113	6	-	6	1,739
Salmon	3	-	6	-	2	-	4	-
Sardines	57	4	94	7	24	2	39	4

use of the Armed Forces in both January and February 1963. Purchases of the three principal canned fishery products (tuna, salmon, and sardines) during the first 2 months of 1963 were far below those in the same period of 1962. But in January 1962, the purchases of the Armed Forces satisfied

a large part of their canned tuna requirements for the entire year.

Notes: (1) Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.

(2) See *Commercial Fisheries Review*, June 1963 p. 23.

* * * * *

REVISED FEDERAL SPECIFICATION FOR CANNED SHRIMP PROPOSED:

A revised Interim Federal Specification for canned shrimp, to be used for all Federal procurement and purchasing programs, was requested by the General Services Administration. It is being prepared by the U. S. Bureau of Commercial Fisheries.

The proposed specification revision, which was prepared by the Bureau's Technological Laboratory at Gloucester, Mass., has been mailed to industry and other individuals concerned. The Bureau has requested that recommendations for changes be submitted to the Technological Laboratory, U. S. Bureau of Commercial Fisheries, Gloucester, Mass., by September 11, 1963. Copies of the proposed Revised Specification (PP-S-00311b) may be obtained from the Gloucester Laboratory.



Fisheries Laboratory

NEW MARINE BIOLOGICAL LABORATORY FOR BUREAU OF COMMERCIAL FISHERIES BEING BUILT IN CALIFORNIA:

Ground was broken at La Jolla, Calif., on June 8, 1963, for a new Biological Laboratory to be built for the Bureau of Commercial Fisheries. When completed, the laboratory will be the U. S. Department of the Interior's major oceanographic-fishery research facility on the West Coast. It is scheduled for completion in about 15 months and will house a staff of some 200 Federal, State, and University of California research workers, as well as outside industry people. The laboratory will be under the direction of Dr. E. H. Ahlstrom.

The new facility will consist of a four-building complex with 65,000 feet of laboratory and office space, and will be built on a 2.4-acre tract on the University of California San Diego campus.



Architect's model of new BCF laboratory building at La Jolla, California.

The principal speaker at the groundbreaking ceremony was Under Secretary of the Interior James K. Carr, who said, "The new marine laboratory at La Jolla is a symbol of what we expect and need to accomplish in oceanography in all the fishery research centers of the Nation." Other dignitaries present were Senator Clair Engle (Calif.), and Commissioner Clarence F. Pautzke of the U. S. Fish and Wildlife Service. (National Oceanographic Data Center Newsletter, June 30, 1963.)



Fish Oils

FLAVOR CHANGE INDICATED DURING OXIDATION OF MENHADEN OIL FRACTIONS:

Recent work on a project concerning flavor change in pure oxidizing fish oils, included a study of the difference in flavor progression in oxidizing fractions of menhaden oil using fractions of differing degrees of unsaturation. This work is being conducted by the U. S. Bureau of Commercial Fisheries Technological Laboratory at Seattle, Wash. Menhaden oil fatty acid esters were fractionated into four equal fractions in the molecular still. An additional refining step was necessary to give a satisfactory flavor. The initial flavor of the three most unsaturated fractions was a very small "green" flavor reminiscent of new-mown grass.

The fraction having the lowest iodine number had a burnt fish meal-type flavor ob-

served before in whole oil. It is not known at this time if this burnt flavor is that from saturated fatty acid components or other compounds distilled over in the same boiling range. It has also been noted that all three of the most unsaturated fractions pass through a "cod-liver oil" type "fishiness" before developing characteristic rancidity. This is not in accord with the hypothesis formerly held that this type of "fishiness" might be associated with the unique fish oil acids--those with the highest degree of unsaturation--in which case fraction four (the most unsaturated of the fractions) would have the most if not all of this type of "fishiness" during oxidation. Work on oxidation of menhaden oil fractions is being continued.



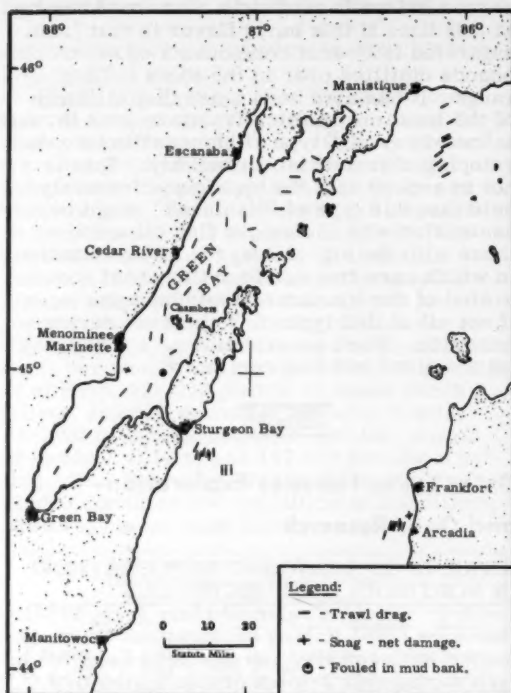
Great Lakes Fisheries Exploration and Gear Research

RESULTS OF TRAWLING EXPLORATIONS IN NORTHERN LAKE MICHIGAN:

M/V "Cisco" Cruise 12 (July 2-15, 1963): Intensive trawl fishing explorations were conducted in Green Bay and northern Lake Michigan during this 2-week cruise by the U. S. Bureau of Commercial Fisheries research vessel Cisco. Primary objectives were to: (1) determine the geographic and depth distribution and the abundance of various fish stocks, (2) define areas suitable for otter-trawl-type fishing, and (3) assess the effectiveness of commercial-type otter trawls for catching abundant species such as alewife, smelt, and bloater chubs. The areas explored will be revisited periodically for some time in order to follow seasonal fluctuations in the distribution of fish and their availability to otter trawls.

In order to expedite and economize commercial fisheries research activities going on concurrently in Lake Erie and Lake Michigan, the Bureau's research vessels Cisco and Kaho exchanged duties during this cruise period. While the Cisco was used for trawl explorations in Green Bay and northern Lake Michigan, the Kaho was used for environmental research in Lake Erie.

Noteworthy features of Cruise 12 include the virtually straight-alewife catches taken in Green Bay, the generous amount of obstruction-free trawlable grounds located in both



Area covered by M/V *Cisco* during Cruise 12 (July 2-15, 1963).

Green Bay and northern Lake Michigan, and the total (or near total) absence of yellow perch, whitefish, and yellow pike from trawl catches throughout the cruise. Those findings may prove to be important in advancing the development of methods for utilizing alewife which have become extremely abundant in recent years, and often a nuisance in Lake Michigan and connecting waters. Like the predatory sea lamprey, the alewife is another Great Lakes invader from the Atlantic Ocean.

Green Bay pound-net fishermen at Cedar River and Menominee have produced several million pounds of alewife for animal food markets in the past year or two. Pound-net fishing is effective, however, only when fish are in relatively shallow inshore waters. Trawling could make it possible to follow alewife into deeper waters and extend the producing season from the present few weeks to as long as 9 or 10 months. Commercial trawlers have accomplished this objective in southern Lake Michigan since 1959. Such an extension of the production period provides

a considerable advantage in handling and storing the catch for supplying processors who operate at a sustained level throughout the year.

The Bureau has conducted trawl fishing investigations with chartered commercial fishing vessels and its exploratory fishing vessel *Kaho* in Lake Michigan since 1960. The biological research vessel *Cisco* has used trawls for sampling Great Lakes fish populations since 1954. The assessment of the trawl method of commercial fishing in northern Lake Michigan was initiated in April 1963; all prior work had been confined to waters below Ludington, Mich., and Algoma, Wis.

Working closely with State fisheries agencies in Michigan and Wisconsin, the Bureau has been instrumental in establishing a trawl fishery in southern Lake Michigan which has produced from 7.0 to 8.7 million pounds of fish during each of the last three years. The trawl catch amounted to about 34 percent of

Table 1 - Summary of Production Rate and Species Composition of Trawl Catches from Green Bay during M/V *Cisco* Cruise 12

Nearest 5-Fathom Depth Increment	No. of Drags	Catch Rate in Pounds Per Drag		Catch Composition	
		Range	Average	Species	Percentage of Catch
<u>Green Bay -- Chambers Island and South</u>					
5	2	395 to 629	512	Alewife	98.6
				Smelt	0.0
				Yellow perch	0.6
				Other	0.8
10	1/2	50 to 553	302	Alewife	95.3
				Smelt	0.8
				Yellow perch	0.6
				Other	3.3
15	2/5	1 to 120	58	Alewife	65.1
				Smelt	34.2
				Yellow perch	0.0
				Other	0.7
<u>Green Bay -- North of Chambers Island</u>					
5	5	100 to 290	169	Alewife	98.9
				Smelt	0.0
				Yellow perch	0.4
				Other	0.7
10	6	1 to 862	419	Alewife	99.7
				Smelt	0.0
				Yellow perch	0.0
				Other	0.3
15	3	60 to 290	128	Alewife	88.8
				Smelt	10.4
				Yellow perch	0.0
				Other	0.8
20	3	27 to 144	94	Alewife	53.4
				Smelt	43.4
				Yellow perch	0.0
				Other	3.2

1/ Two other drags made in this depth; one encountered snag and tore up. The trawl gear malfunctioned during the other drag.

2/ One other drag was halted; gear fouled in mud bank.

the total Lake Michigan commercial fish production in 1961. At certain times of the year, trawlers catch as much as 9 tons of alewife in a single drag lasting only 10 to 30 minutes. State fisheries agencies and the Bureau keep commercial trawl operations under careful surveillance in order to follow the effects of trawling on species other than alewife and bloater chubs which are plentiful. So far, other species (mostly large chubs)

have made up less than 10 percent of the annual Lake Michigan trawl catch.

FISHING RESULTS: A total of 57 drags was made with a standard 52-foot (headrope) Gulf of Mexico-type semiballoon fish trawl. All drags lasted 30 minutes except for three, which were terminated when the net became fouled on bottom obstructions. Resulting gear damage was minor. Bottom conditions

Table 2 - Total Weight (in Pounds and Species Composition) of 30-Minute Trawl Catches at Trawling Stations off Sturgeon Bay, Wis., and Arcadia and Manistique, Mich., during M/V Cisco Cruise 12

Nearest 5-Fathom Depth Increment	Sturgeon Bay		Arcadia		Manistique	
	Catch in Pounds	Species (Percentage of Catch)	Catch in Pounds	Species (Percentage of Catch)	Catch in Pounds	Species (Percentage of Catch)
10	1	$\frac{1}{2}$ A-(100) B-(0) C-(0) O-(0)	6/ 0		115	A-(78) B-(3) C-(3) $\frac{3}{4}$ O-(16)
15	38	A-(5) B-(63) C-(13) $\frac{3}{4}$ O-(19)	69	A-(3) B-(62) C-(30) O-(5)	150	A-(23) B-(11) C-(6) $\frac{3}{4}$ O-(60)
20	32	A-(2) B-(53) C-(44) O-(1)	225	A-(0) B-(66) C-(33) O-(1)	42	A-(5) B-(33) C-(29) $\frac{3}{4}$ O-(33)
25	55	A-(0) B-(73) C-(27) O-(0)	137	A-(0) B-(59) C-(40) O-(1)	6	A-(0) B-(33) C-(0) $\frac{3}{4}$ O-(67)
30	16	A-(0) B-(69) C-(31) O-(0)	340	A-(0) B-(76) C-(24) O-(0)	12	A-(0) B-(33) C-(25) O-(42)
35	91	A-(1) B-(66) C-(33) O-(0)	7/225	A-(0) B-(76) C-(24) O-(0)	6	A-(17) B-(67) C-(16) O-(0)
45	8	A-(12) B-(63) C-(25) O-(0)	106	A-(0) B-(74) C-(24) O-(1)	35	A-(3) B-(43) C-(54) O-(0)
50	$\frac{4}{5}$ ----		----		115	A-(0) B-(70) C-(20) $\frac{5}{8}$ O-(10)
60	80	A-(0) B-(14) C-(6) $\frac{5}{8}$ O-(80)	----		12	A-(0) B-(42) C-(0) $\frac{5}{8}$ O-(58)
70	12	A-(33) B-(0) C-(0) $\frac{5}{8}$ O-(67)	66	A-(2) B-(35) C-(15) $\frac{5}{8}$ O-(48)	----	
80	206	A-(0) B-(2) C-(1) $\frac{5}{8}$ O-(97)	----		----	

1/A-Alewife, B-Bloater chub, C-Large chub, O-Other species.

2/(O) = less than one percent.

3/All smelt.

4/---- Suitable trawling areas but not fished this cruise.

5/All freshwater sculpin.

6/Smag - tore net.

7/One other drag resulted in a "water haul" caused by a strong current.

and vertical distribution of fish were determined with a high-resolution white-line-type depth-sounder recorder.

Using an hourly catch rate of 500 pounds or more as a basis for indicating a potential for profitable commercial trawl fishing, good results were obtained in Green Bay itself, and in Lake Michigan proper off Arcadia, Mich. Catches were virtually alewife only at all depths fished in Green Bay, while bloater chub (at depths of 15 to 50 fathoms) and freshwater sculpin (at depths of 60 to 80 fathoms) dominated catches in the open lake. Although catches were relatively small off Sturgeon Bay, Wis., and Manistique, Mich., the bottom was found suitable for trawling and it is presumed that trawl fishing will be better in those areas at other times.

Commercially significant catches of alewife were taken in Green Bay only (table 1). Three drags at depths between 3 and 8 fathoms in the southern half of the Bay produced 390, 530, and 620 pounds. Seven drags in the northern half of the Bay, at depths from 3 to 16 fathoms, produced catches ranging from 290 to 860 pounds and averaging 438 pounds of alewife per drag.

Lake Michigan proper (table 2) yielded commercially significant catches off Arcadia, Mich., only, where bloater chub catches of 223, 225, and 340 pounds per drag were taken at depths of 20, 35, and 30 fathoms, respectively. Large chub made up 24 to 33 percent of those catches. Best catches off Sturgeon Bay were 90 pounds of chub at 35 fathoms and 200 pounds of freshwater sculpin at 80 fathoms. Best catches off Manistique were 90 pounds of alewife, 90 pounds of smelt, and 103 pounds of chub at 10, 15, and 50 fathoms, respectively.

In Green Bay, species other than alewife were taken as follows:

Species	No. of Drags Yielding	Size of Catch
Chubs	3	up to 3 pounds
Herring	4	up to 2 pounds
Sculpins	4	less than 1 pound
Sea lamprey	5	1 individual/drag
Shiners	1	less than 1 pound
Smelt	4	5 to 84 pounds
Suckers	3	5 to 20 pounds
Whitefish	7	up to 3 pounds
Yellow perch	5	up to 3 pounds

In Lake Michigan proper, species other than chubs appeared in catches as follows:

Species	No. of Drags Yielding	Size of Catch
Alewife	16	up to 15 pounds except one 90-pound catch
Herring	4	up to 2 pounds
Sculpins	14	up to 12 pounds except 3 catches of 32, 64, and 200 lbs.
Smelt	16	up to 16 pounds except one 90-pound catch
Stickleback	1	less than 1 pound
Whitefish	1	one small individual

BIOLOGICAL DATA COLLECTED: Co-operating scientists from the Bureau's Division of Biological Research aboard the Cisco during the Green Bay portion of the cruise collected length, weight, sex, and state-of-maturation data of alewife and smelt. Scale samples were taken from alewife for age and growth studies.

WATER TEMPERATURES: Bathythermograph recordings revealed a high degree of stratification throughout the areas investigated. Surface temperatures ranged from 56° F. to 74° F. in Green Bay and from 56° F. to 60° F. in open Lake Michigan waters.

Note: See Commercial Fisheries Review, August 1963 p. 23.



Great Lakes Fishery Investigations

WESTERN LAKE SUPERIOR FISHERY SURVEY CONTINUED:

M/V "Siscowet" Cruise 3 (June 24-July 3, 1963): Studies of the abundance and distribution of juvenile lake trout in western Lake Superior were continued during this cruise by the U. S. Bureau of Commercial Fisheries research vessel Siscowet. Particular emphasis was given to bottom trawling in outlying waters, where small lake trout are less abundant than in areas near the planting sites. The average number of juvenile lake trout caught in each 15-minute trawl tow at stations located 10 miles or more from the nearest planting site varied from nothing to 3.5. At distances of 5 miles or less the catch ranged from 10 to 23 per tow. Of 246 juvenile lake trout taken in trawls during the cruise, a total of 244 (99.2 percent) were hatchery-reared. Most were taken at depths of 20-25 fathoms.

Experimental gill nets (2 nets each of six mesh sizes, from 2 to 3½ inches), set at 25-28 fathoms east of Madeline Island and south of Stockton Island, yielded 107 small lake trout of which 102 (95.3 percent) were fin-clipped. All of the fin-clipped lake trout

caught during the cruise had been planted in the Bayfield region.

Other species commonly taken in the trawls and gill nets were smelt, chub (bloat-er), and sticklebacks. One 15-minute trawl tow at 15 fathoms yielded 52 yearling coregonines (whitefish).

Large-mesh plankton nets towed at 1 to 18 fathoms below the surface took 22 larval fish, among which were coregonines, smelt, trout-perch, and sculpin.

Surface water temperatures during this cruise ranged from 45.9° F. in Pikes Bay to 66.9° F. east of Madeline Island.

Note: See Commercial Fisheries Review, August 1963 p. 28.

ENVIRONMENTAL CONDITIONS IN APOSTLE ISLANDS AREA OF LAKE SUPERIOR STUDIED:

M/V "Siscowet" Cruise 4 (July 15-24, 1963): Midsummer environmental conditions were studied at three limnological stations in the Apostle Islands region of Lake Superior on this cruise by the U. S. Bureau of Commercial Fisheries research vessel Siscowet. The limnological collections included water samples, bottom and plankton samples, records of water temperature, and Secchi-disc readings. Surface water temperatures reached 69.3° F. among the islands but in the open lake the water temperature was 57.9° F. Plankton appeared to be more abundant in the warmer waters of the island region.

Experimental gill nets (two nets each of six mesh sizes, from 2½ to 3½ inches) were fished at 15-27 fathoms at Presque Isle Bay, Punky Bay, and just east of Madeline Island to establish a catch-per-unit-effort index for lake trout which can be used to measure the relative abundance of naturally-produced and hatchery-reared lake trout in future years.

The total catch from twelve 2-night sets (43,000 feet of gill nets) was 333 lake trout (ranged from 8.6 to 27.0 inches long) of which 313 (94 percent) were fin-clipped. Most of the lake trout were re-marked by removal of the anal fin and returned alive to the water. The lake trout planted at Bayfield in 1960-61 were most common among the fin-clipped fish. Other species taken in the gill

nets (in order of frequency) were smelt, bloater chub, lake herring, whitefish, and longnose suckers.

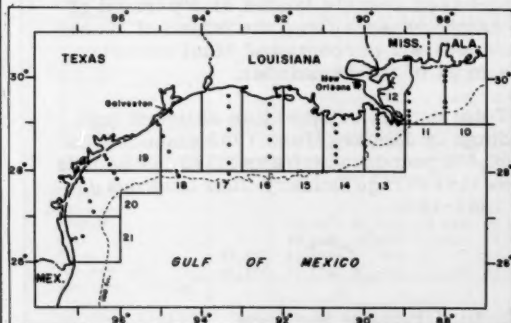


Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Gus III" Cruise GUS-7 (July 10-17, 1963): Catches of brown shrimp were especially good in 3 of the 8 statistical areas covered during this cruise by the chartered research vessel Gus III, operated by the U. S. Bureau of Commercial Fisheries Biological Laboratory at Galveston, Tex. This cruise off the Louisiana and Texas coasts is part of a shrimp distribution study in the Gulf of Mexico.

More brown shrimp (mostly small) were caught in the 10-20 fathom depth than other depth ranges. White shrimp catches from most areas were 15-20 count and were best at stations nearer shore. One 3-hour tow with a 45-foot shrimp trawl was made in each of the 3 depth ranges in all areas.



Shows the station pattern for the shrimp distribution studies in the Gulf of Mexico during Cruise 7 of Gus III.

Areas 14 and 20 yielded the best catches of brown shrimp, mostly 31-40 count from 10-20 fathoms. The yield of large brown shrimp (15-20 count) from those areas was small, but with a relatively good catch of 23 pounds of 15-20 white shrimp from 0-10 fathoms in area 20.

Area 13 yielded a total of 48 pounds of brown shrimp about evenly distributed among the 3 depth ranges, and 2 pounds of 15-20 count white shrimp.

A total catch of 51 pounds from Area 18 included 40 pounds of small brown shrimp, mostly from 0-10 fathoms. The remainder was large white shrimp (15-20 count) from that same depth.

Large white shrimp (15-20) were present in catches from all areas but one. The percentage of white shrimp taken from those areas ranged from 22 to 60 percent of the total catch per area, with the higher white shrimp ratio from Areas 16 and 19.

Notes: (1) Shrimp catches are heads-on weight; shrimp sizes are the number of heads-off shrimp per pound.

(2) See Commercial Fisheries Review, August 1963 p. 29.



Hawaii

SKIPJACK TUNA LANDINGS, JANUARY-JUNE 1963:

Skipjack tuna landings in Hawaii during June 1963 were about 1 million pounds, or 755,000 pounds below the 1948-62 average for the month. This June there were 128 productive vessel trips. Individual catches ranged from 180 pounds to 23,920 pounds. Oahu-based vessels landed 61.5 percent of the catch; vessels from the Island of Hawaii produced 19.2 percent; and Maui vessels took most of the remainder.

Total estimated Hawaiian skipjack tuna landings in January-June 1963 amounted to 2,750,000 pounds, which was 1,395,000 pounds below the average January-June landings during 1948-1962.



Industrial Fishery Products

U. S. FISH MEAL AND SOLUBLES:

Production and Imports, January-June 1963: Based on domestic production and imports, the United States available supply of fish meal for January-June 1963 amounted to 272,090 short tons--9,368 tons (or 3.6 percent) more than during the same period in 1962. Domestic production was 31,680 tons (or 26.0 percent) less, but imports were 41,048 tons (or 29.1 percent) higher than in the same period in 1962. Peru continued to lead other countries with shipments of 136,051 tons.

The United States supply of fish solubles (including homogenized fish) during January-June 1963 amounted to 42,923 tons--a decrease of 12,845 tons as compared with the same period in 1962. Domestic production and imports dropped 21.4 percent and 43.1 percent, respectively.

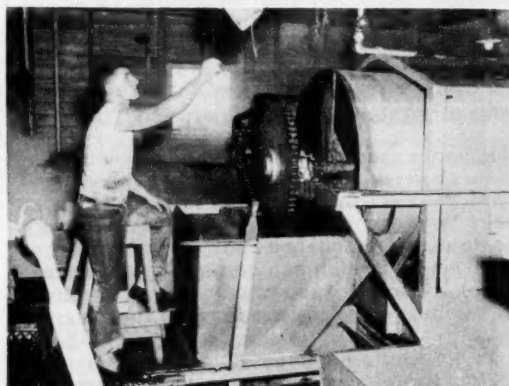
U. S. Supply of Fish Meal and Solubles, January-June 1963 with Comparisons			
Item	Jan.-June		Total 1962
	1/1963	1962	
. (Short Tons)			
Fish Meal and Scrap:			
Domestic Production:			
Menhaden.	68,528	89,772	238,680
Tuna and mackerel.	10,369	14,968	26,559
Herring.	428	1,141	5,095
Other.	10,831	15,955	40,898
Total production.	90,156	121,836	311,232
Imports:			
Canada.	23,328	23,242	42,806
Peru.	136,051	106,377	186,249
Chile.	16,798	3,682	9,247
So. Africa Republic.	4,466	7,184	10,084
Other countries.	1,291	401	3,921
Total imports.	181,934	140,886	252,307
Available fish meal supply.	272,090	262,722	563,539
Fish Solubles:			
Domestic production ^{2/}	40,484	51,478	124,334
Imports:			
Canada.	1,341	795	1,335
Iceland.	-	2,205	2,332
Other countries.	1,098	1,290	2,641
Total imports.	2,439	4,290	6,308
Available fish solubles supply.	42,923	55,768	130,642
^{1/} Preliminary.			
^{2/} 50-percent solids. Includes production of homogenized condensed fish.			

^{1/} Preliminary.

^{2/} 50-percent solids. Includes production of homogenized condensed fish.

U. S. FISH MEAL, OIL, AND SOLUBLES:

Production, July 1963: Preliminary data on U. S. production of fish meal, oil, and sol-



Fish pumps are used to carry fish from the hold of the vessel into the reduction plant. From the dewatering sieve, a Moss Point, Miss., plant uses a "quarter box," which measures the quantity of fish by volume rather than by weight.

ubles for July 1963 as collected by the U. S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the table.

U. S. Production ^{1/} of Fish Meal, Oil, and Solubles, July 1963 (Preliminary) with Comparisons				
Area	Meal Short Tons	Oil 1,000 Pounds	Solubles Short Tons	Homogenized ^{2/} Short Tons
July 1963:				
East & Gulf				
Coasts	38,487	28,276	15,238	2,531
West Coast ^{2/}	2,030	468	1,292	-
Total	40,517	28,744	16,530	2,531
Jan.-July 1963				
Total	130,673	98,532	53,173	6,372
Jan.-July 1962				
Total	177,438	143,294	65,694	8,020

^{1/}Does not include crab meal, shrimp meal, and liver oils.

^{2/}Includes Hawaii, American Samoa, and Puerto Rico.

^{3/}Includes condensed fish.

Note: Beginning with March 1963 fish oil is shown in pounds instead of gallons. Conversion factor, 7.75 pounds equal 1 gallon.

Production, June 1963: During June 1963, 34,500 tons of fish meal and 27.6 million pounds of oil were produced in the United States. Compared with June 1962, this was a decrease of 26,671 tons or 44 percent in meal and scrap production, and a decrease of approximately 27.3 million pounds or 50 percent in oil.

Menhaden meal showed a decrease of 24,421 tons or 46 percent, while menhaden oil (26.3 million pounds) was 50 percent less than in June 1962.

A total of 13,587 tons of fish solubles was manufactured in June 1963--a decrease of 37 percent compared with the same month in 1962. Production of homogenized condensed fish amounted to 1,341 tons--a decrease of 1,829 tons or 58 percent.

The quantity of fish meal processed during the first 6 months of 1963 amounted to 90,156 tons--31,880 tons less than in the same period of the previous year. Fish solubles and homogenized fish production totaled 53,366 tons--an increase of 1,888 tons. Production of marine-animal oil amounted to 69.8 million pounds--a decrease of 25.8 million pounds.

Table 1 - U. S. Production of Fish Meal, Oil, and Solubles, June 1963 ^{1/} with Comparisons				
Product	June		Jan.-June	
	1/1963	1962	1/1963	1962
(Short Tons)				
Fish Meal and Scrap:				
Herring	278	795	428	1,141
Menhaden ^{2/}	30,147	53,568	88,538	89,772
Sardine, Pacific	-	-	9	648
Tuna and mackerel	939	2,837	10,269	14,968
Unclassified	4,130	9,971	10,822	15,307
Total	34,500	61,171	90,156	121,636
Shellfish, marine-animal meal and scrap	4/	4/	4/	4/
Grand total meal and scrap	4/	4/	4/	4/
Fish Solubles:				
Menhaden	12,018	18,734	28,873	30,275
Other	1,569	2,842	8,070	14,383
Total	13,587	21,576	36,943	44,658
Homogenized condensed fish	1,341	3,170	3,841	6,820
(1,000 Pounds)				
Oil, body:				
Herring	2/	831	2/	885
Menhaden ^{3/}	26,316	52,413	64,747	88,280
Sardine, Pacific	-	-	-	148
Tuna and mackerel	369	437	1,864	2,172
Other (including whale)	1,042	1,243	2,877	4,109
Total oil	27,627	54,924	69,788	95,604
Oil, body:				
Herring	2/	831	2/	885
Menhaden ^{3/}	26,316	52,413	64,747	88,280
Sardine, Pacific	-	-	-	148
Tuna and mackerel	369	437	1,864	2,172
Other (including whale)	1,042	1,243	2,877	4,109
Total oil	27,627	54,924	69,788	95,604

^{1/}Preliminary data.

^{2/}Included in "other" or "unclassified."

^{3/}Includes a small quantity of dorsal finings.

^{4/}Not available on a monthly basis.

Note: Beginning with February 1963, fish oil is shown in pounds instead of gallons. Conversion factor, 7.75 pounds equal 1 gallon.

Major Indicators for U. S. Supply, June 1963: United States production of fish meal in June 1963 was lower by 36.7 percent, as compared with June 1962. Fish oil and fish solubles production also decreased by 48.8 percent and 33.8 percent, respectively.

Major Indicators for U.S. Supply of Fish Meal, Solubles, and Oil, June 1963					
Item and Period	1963	1962	1961	1960	1959
Fish Meal: (Short Tons)					
Production ^{1/} :					
August	-	38,955	57,031	49,709	47,364
July	-	52,574	62,586	55,696	52,132
June	36,982	58,397	53,162	44,293	52,006
January-May	55,656	55,748	55,978	46,646	39,467
Jan.-Dec. prelim. totals ^{2/}	-	288,336	289,039	257,969	275,396
Jan.-Dec. final tot.	-	310,000	311,265	290,137	306,551
Imports:					
August	-	28,253	19,026	8,340	5,695
July	-	25,857	18,710	13,131	4,303
June	-	26,453	19,317	11,178	10,386
January-May	163,482	114,433	88,146	55,197	94,585
January-December	-	252,307	217,845	131,561	135,955
Fish Solubles: (1,000 Pounds) ^{5/}					
Production ^{3/} :					
August	-	15,833	19,603	16,891	30,378
July	-	22,165	21,870	20,208	33,133
June	16,109	24,350	17,821	19,549	29,594
January-May	26,373	24,886	20,132	19,742	33,721
Jan.-Dec. prelim. totals	-	120,063	109,018	106,361	176,913
Jan.-Dec. fin. tot.	-	124,334	112,241	98,929	165,359
Imports:					
August	-	422	318	180	4,718
July	-	306	708	96	4,938
June	-	872	207	149	954
January-May	2,116	3,418	1,012	2,369	8,871
January-December	-	6,308	6,739	3,174	26,630
Fish Oils: (1,000 Pounds) ^{5/}					
Production:					
August	-	33,526	50,749	38,052	30,043
July	-	46,608	58,533	41,362	32,108
June	27,432	53,565	48,794	36,207	37,401
January-May	41,166	39,299	38,504	16,894	24,676
Jan.-Dec. prelim. totals ^{4/}	-	257,131	259,400	206,848	189,240
Jan.-Dec. final tot.	-	255,808	266,670	215,861	193,324
Exports:					
August	-	33,272	13,304	1,395	18,367
July	-	128	4,421	40,603	28,276
June	-	4,922	21,036	14,360	11,358
January-May	97,551	58,084	47,092	37,191	37,999
Jan.-Dec. totals	-	123,050	122,486	143,659	144,481

^{1/}Does not include crab meal, shrimp, and misc. meals.

^{2/}Preliminary data computed from monthly data. Fish meal production reported currently comprised 90 percent for 1959, 89 percent for 1960, 93 percent for 1961 and 1962.

^{3/}Includes homogenized fish.

^{4/}Preliminary data computed from monthly data. Represents over 95 percent of the total production.

^{5/}Beginning with March 1963 fish oil is shown in pounds instead of gallons. Conversion factor, 7.75 pounds equal 1 gallon.

Note: Data for 1963 are preliminary.

FISH MEAL IS A RELIABLE SOURCE OF TRACE MINERALS:

When comparisons are made between nutritional values of fish meal and other protein

concentrates, the trace minerals are not always taken into consideration. The value of such trace minerals should not be ignored. The reasons are given in the paper "Nutrient Composition and Evaluation of British Columbia Whole Herring Meal"^{1/}:

"Today there is a tendency in formulating poultry feeds to use fewer and fewer major ingredients in any given ration. For example, in a corn-soya broiler ration as much as 90 percent of the total ration may consist of corn and soyabean oil meal alone. With this type of ration there is an increased possibility of encountering deficiencies of trace minerals as compared with the situation some years ago when rations were composed of a much greater variety of natural feedstuffs such as oats, bran and wheat middlings. In the latter case there was a probability that the grains and grain by-products came from different areas and there was accordingly little likelihood of soil deficiencies in any particular area adversely influencing the mineral composition of the ration as a whole."

Fish meal can be relied upon to supply a variety of valuable minerals, including trace minerals, as shown in the table.

Mineral Content of Menhaden Meals ^{1/} (Mean of 6 Meals)			
Mineral	Percent	Mineral	p. p. m.
Calcium	6.0	Boron	1.8
Magnesium	0.2	Cobalt	1.4
Phosphorus	3.5	Copper	7.7
Potassium	0.4	Fluorine	89
Salt (NaCl)	0.6	Iodine	4.7
Sulfate (SO ₄)		Iron	572
Water soluble	0.1	Manganese	55.1
		Zinc	134

^{1/}Snyder, D. G., L. E. Ousterhout, and others. "The Evaluation of the Nutritive Content of Fish Meals by Chemical Methods." *Poultry Science* **XLI**, 1736, 1962.

The table includes information not only on the minerals usually reported upon but also on some minerals upon which little or no information has been available.

According to a group of Norwegian workers,^{2/} in fish meal "the high content of some minerals, especially. . . (calcium, phosphorus, sodium, chlorine, and iodine). . . may be an asset, especially in supplementing poor rations" for cattle. Fish meal, the only protein concentrate available in Norway during World War II, gave excellent results

when used with the otherwise poor feedstuffs available for cattle at that time, and it appears that one reason for the excellence of those results was the presence of trace minerals in the meal.

As a source of trace minerals in mixed feeds for poultry and swine, fish meal is not only economical but dependable as well.

^{1/}March, B. E.; J. Biely; H. L. A. Tarr, 1963. *J. Fish Res. Bd. Canada*, 20 (1), p. 229.

^{2/}Ekern, A. T., T. Homb, and others, "Fish and Fishery Products in Ruminant Nutrition," *Fish in Nutrition*, 1962, p. 324, published by Fishing News Ltd., London, England.

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OBSERVATIONS ON USE OF FISH MEAL AND OIL IN ANIMAL NUTRITION:

Mixed feed producers in several southern States and scientists at State Experiment Stations in Florida, Louisiana, and Mississippi, and the Tennessee Experiment Station at Knoxville were visited around mid-June 1963 by an animal nutritionist of the U. S. Bureau of Commercial Fisheries Technical Advisory Unit. These are some of his observations:

The level of fish meal used in broiler and growing layer-type chick rations in the areas visited appears to be around 3 percent (a level perhaps somewhat higher than the mean level fed in the United States as a whole).

A professor at the Florida Experiment Station said that on his recent visit to Peru, he had seen pigs that had been fed mainly fish meal rather than grain supplemented by fish meal and other feed ingredients. He stated that the Peruvians are finding that swine grow very rapidly on such a ration. The pork produced by the fish meal-fed pigs is made into a highly flavored sausage which is very popular in South America.

Some of the research now in progress at the State Experiment Stations visited may eventually have a bearing on utilization levels of fish products. For example, recent tests showed that chicks that had received 2 and 4 times the levels of vitamin D presently recommended by nutrition authorities grew faster than those limited to the recommended level. If those tests are confirmed, this may be of importance to the fish-reduction industry because menhaden oil and some other fish oils contain vitamin D at relatively high levels. Other work has shown that protein hydrolysates, such as steam-treated feathers, stimulate ruminant growth. Additional findings resulting from those investigations may demonstrate heretofore unsuspected values of some animal proteins, including those of fish in animal nutrition.

Investigations in progress at one of the southern experiment stations are demonstrating the existence of an interaction between the levels of ingested protein and energy and rates of growth. Such studies, presumably pointing the way to greater economy in feeding, may result in increased efficiency in the utilization of fish meal and other protein concentrates.

To control feed intake of cattle with a minimum of labor, animals at one station were fed concentrate rations that were 12 to 14 percent stabilized fat. This high fat level prevented the cattle from eating more feed than the optimum intake each day even though they had free access to the feed. The need for daily hand feeding was therefore eliminated. In addition, an investigation is in progress at that same station to determine the extent to which fat in the feed limits microbiological activity in the rumen and prevents loss of energy in rumen gases. Both lines of investigation may lead to information

that could pave the way for some utilization of marine oils in ruminant feeding.

An investigation at the Tennessee Experiment Station on the feeding of menhaden oil to growing cattle has been completed. The investigation demonstrated that young cattle can consume rations containing up to 7.5 percent menhaden oil without exhibiting either a decrease in rate of feed consumption or symptoms of indigestion.



Irradiation Preservation

NEW METHOD OF ASSESSING FRESH FISH QUALITY STUDIED:

The need for a rapid determination of fresh fish quality has been accentuated by the studies on preservation of fishery products by use of ionizing radiation. This work is being done at the U. S. Bureau of Commercial Fisheries Technological Laboratory at Seattle, Wash. That Laboratory has found that the measurement of hypoxanthine in fish may help fulfill that need. In three species of fish it was found that the hypoxanthine values are very nearly zero in freshly-killed fish and that the hypoxanthine content accumulates at a fairly uniform rate in fish held at melting-ice temperatures. Hypoxanthine can be determined rapidly and easily by spectrophotometry.

EXPERIMENTS ON MICROWAVE PASTEURIZATION OF CRAB MEAT PROMISING:

To determine the feasibility of pasteurizing blue crab meat with high frequency microwaves, preliminary experiments were conducted during the summer of 1962 at the U. S. Bureau of Commercial Fisheries Technological Laboratory, Gloucester, Mass. Results of the initial experiments were encouraging. Total bacteria plate counts showed a reduction from 5.4 million per gram to 8,500 per gram in the microwave pasteurized sample and from 5.4 million per gram to 250 per gram in a hot-water pasteurized sample. The results of taste tests showed a slight preference for the microwave pasteurized sample. To heat the crab meat samples, to an internal pasteurization temperature of 170° F. with microwaves, required approximately two minutes. This was a short heat-processing period in comparison to the approximately 75 minutes required to obtain a 170° F. internal temperature in a hot-water bath.

A report from the Bureau's Technological Laboratory at Seattle, Wash., on the microwave pasteurization of dungeness crab meat confirms the Gloucester Laboratory's opinion that the microwave technique has promising possibilities. Both laboratories had troubles with the plastic containers in which the crab meat was processed. They agree that suitable containers must be found that will withstand the rigors of the heat produced during the short microwave process. Both laboratories plan to continue investigations on this potential pasteurization technique.

Note: See *Commercial Fisheries Review*, June 1963 p. 35 and February 1963 p. 42.

ATOMIC ENERGY COMMISSION BUILDS IRRADIATION PRESERVATION LABORATORY IN MASSACHUSETTS:

Groundbreaking ceremonies for a new Marine Products Development Irradiator facility at Gloucester, Mass., were held by the U. S. Atomic Energy Commission (AEC) on July 26, 1963. It will be located adjacent to the U. S. Bureau of Commercial Fisheries Technological Laboratory. The fishery products irradiator is being built to demonstrate the feasibility of extending the refrigerated storage life of fresh fishery products as a part of the AEC radiation-pasteurized food program.

The ceremony was attended by industry and government officials. The principal speaker was Representative William H. Bates (Mass.), member of the Congressional Joint Committee on Atomic Energy, who discussed the application of pasteurizing doses of radiation to fishery products. Talks on irradiation of fishery products were also given by the Director of the Division of Isotopes Development, AEC, and Thomas D. Rice, Special Assistant to the Commissioner, U. S. Fish and Wildlife Service. Industry members gave their views on the application of radiation to fishery products. The ceremony was followed by a luncheon consisting of irradiated fishery products--clam chowder, fried clams, fried haddock, and finnan-haddie. The products served were over two weeks old and were well received by the group.

When completed in late 1964, the \$600,000 facility will operate on a near-commercial scale, processing marine products at a rate of up to one ton an hour using a 250,000-curie cobalt-60 radiation. The irradiator

will be operated as part of the research and development program conducted for AEC by the U. S. Bureau of Commercial Fisheries Technological Laboratory at Gloucester.

Fresh food successfully pasteurized by radiation does not lose its characteristic appearance, taste, or odor, but does have a longer refrigerated shelf-life. The energy--gamma radiation emitted by the radiocobalt source--passes through the food without leaving a trace. As it does, it destroys bacteria and other spoilage-causing organisms. As a result of the process, fishery products such as flounder, haddock, clams, shrimp or crab, can be kept in ocean-fresh condition for over four weeks under normal refrigeration. The results of research up to now show that low dose radiation pasteurization does not affect food wholesomeness or nutritional values. (National Oceanographic Data Center News-letter, June 30, 1963.)



Maine Sardines

CANNED STOCKS, JULY 1, 1963:

On July 1, 1963, canners' stocks of Maine sardines were up 71.9 percent and distributors' stocks were up 61.9 percent from those of July 1, 1962. The average wholesale price of canned Maine sardines at New York City in July 1963 was \$8.11 per standard case compared with \$10.86 per case in July 1962.

On April 15, 1963, when the new canning season opened, carryover stocks at the canners' level amounted to about 660,000 cases as compared to a carryover of only 33,000 cases on April 15, 1962. (The pack in 1961 was unusually small.) The sardine pack during April 15-June 30, 1963, amounted to 232,000 cases, and by July 27, 1963, the pack reached 728,000 cases. During the 1962 canning season, the pack to June 30, 1962,

was 452,000 cases, and by July 27, 1962, the pack totaled 890,000 cases.

Notes: (1) The usual 7½-month Maine sardine packing season opened on April 15 in 1963. The 1962 season was extended to 13 months--Dec. 2, 1961-Jan. 1, 1963--but the 1962 pack canned before April 15 was insignificant.

(2) See Commercial Fisheries Review, August 1963 p. 36.



Marketing

EDIBLE FISHERY PRODUCTS MARKETING PROSPECTS IN SECOND HALF OF 1963:

During the second half of 1963, the United States per capita consumption of fishery products is expected to increase slightly over the first 6 months of the year. It is expected there will be more fresh and frozen fish available but supplies of some canned fishery products will be lower during the remainder of this year. Per capita consumption of fishery products for the year may be somewhat lower than in 1962.

Retail price trends for fishery products were mostly downward toward the end of the first half of 1963. Generally, prices dropped for shrimp, salmon, canned tuna, and freshwater fish varieties. However, some price strengthening for most fishery products is probable in the second half of the year.

Edible fishery products in cold storage on July 1, 1963, were 166 million pounds compared with 137 million pounds on July 1, 1962. An inventory buildup was under way during the summer months as commercial landings of fish and shellfish approached their seasonal peak.

United States imports of most fishery products during the first part of 1963 were generally lower than a year earlier. But there was a very large increase in receipts of frozen shrimp and canned sardines not-in-

Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, July 1, 1963, With Comparisons^{1/}

Type	Unit	1962/63 Season					1961/62 Season					1960/61 Season	
		7/1/63	6/1/63	4/1/63	1/1/63	11/1/62	7/1/62	6/1/62	4/1/62	1/1/62	11/1/61	7/1/61	6/1/61
Distributors	1,000 actual cases	217	215	264	271	230	134	99	148	193	202	208	215
Canners	1,000 std. cases ^{2/}	643	536	699	1,092	1,348	374	50	45	144	221	201	294

^{1/}Table represents marketing season from November 1-October 31.

^{2/}100 3½-oz. cans equal one standard case.

Note: Beginning with the Canned Food Report of April 1, 1963, U. S. Bureau of the Census estimates of distributors' stocks were based on a revised sample of merchant wholesalers and warehouses of retail multiunit organizations. The revised sample resulted in better coverage. The January 1, 1963, survey was conducted with both samples to provide an approximate measure of the difference in the two samples. That survey showed that the estimate of distributors' stocks of canned Maine sardines from the revised sample was 13 percent above that given by the old sample.

Source: U. S. Bureau of the Census, Canned Food Report, July 1, 1963.



View looking north on South Street in the salt-water section of New York City's Fulton Fish Market.

oil. Imports are expected to be higher for most species during the second half of 1963. In recent years, imports have provided an increasing proportion of total United States consumption of fishery products. In 1962, imports accounted for about 45 percent of that total, up from about 23 percent in 1950.

Note: This analysis was prepared by the Bureau of Commercial Fisheries, U. S. Department of the Interior, and published in the Department of Agriculture's August 1963 issue of the *National Food Situation* (NFS-105).



North Atlantic Fisheries Investigations

SEA HERRING AND SURF CLAM SURVEYS CONDUCTED:

M/V "Delaware" Cruise 63-5 (June 20-29, 1963): This cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware was divided into two parts: Part I: (June 20-24)--A herring survey under the direction of the Boothbay Harbor Biological Laboratory, Boothbay Harbor, Me., and Part II: (June 25-29)--A clam survey conducted by the Exploratory Fishing and Gear Research Base, Gloucester, Mass.

Adult Sea Herring Populations Sampled:

The objectives during the first part of the cruise were to: (1) sample populations of adult sea herring and to obtain ecological data, and (2) make plankton tows for larvae of spring-spawned herring.

The areas of operation were the Northeast Peak of Georges Bank, the Northern Edge of Georges Bank, the waters lying south of

Georges Basin, and north of Cultivator Shoals. The route to Georges Bank was via Platts Bank and Cashes Ledge.

Three otter-trawl sets of about one hour each were made in the areas indicated in figure 1. These sets were made at depths of approximately 40 fathoms. Gill nets (2 cotton and 3 nylon with a combined length of 750 feet) ranging in mesh size from 2 to 2½ inches were set in 88 fathoms of water. A midwater trawl was set at approximately 30 fathoms in 40 fathoms of water.

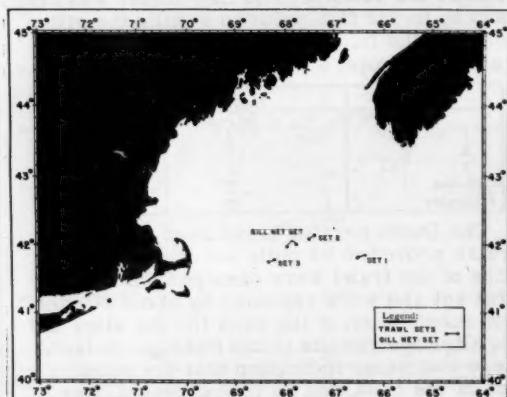


Fig. 1 - Area of operations of M/V Delaware during Cruise 63-5, and showing trawl sets and gill-net sets.

Four 1-meter net oblique tows (10 meters-5 meters-surface) were made during the cruise. Two Hardy recorders (one at 10 meters and one at the surface) were towed on June 28 and 29 (during surf clam cruise)

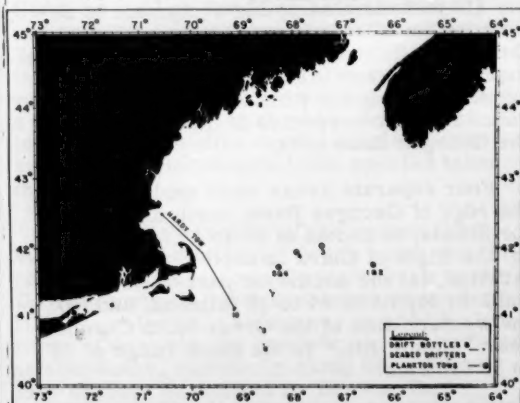


Fig. 2 - M/V Delaware Cruise 63-5, June 20-24, 1963, showing hydrographic operations.

from 41°07' N. 69°10' W. to Gloucester, Mass. The Hardy recorders were towed about 100 miles.

At each trawl set, at the gill-net set, and at other selected sites 5 drift bottles and 5 sea-bed drifters were released. Bathythermograph casts were made, surface salinity samples collected, and weather observations recorded at each station.

Sets were made only in areas in which the fish-finder indicated large schools of fish on or near the bottom. The fish-finder was also used to locate fish prior to setting the gill-nets and the midwater trawl. The results were as follows:

Sets	Herring Bu.	Weight Lbs.
1	8	650
2	57	4300
3	9	700
Gill-net	3	250
Midwater	0	0

The Dutch herring trawl used during the cruise proved to be quite successful. The kites of the trawl were damaged during the first set and were replaced by about 60 cans. The substitution of the cans for the kites did not alter the results of the fishing. In fact, there was some indication that the substitution of the cans was an improvement over the original design. Of the five gill-nets set, three-fourths of the entire catch were obtained with cotton nets. No herring larvae were obtained from the plankton tows.

Clam Sampling Equipment Tested and Abundance Investigated: Objectives of the second part of Delaware cruise 63-5 were to: (1) test clam sampling equipment to determine its effectiveness, and to evaluate the possibilities of its performance on future explorations, and (2) determine as nearly as possible during the time available the abundance of various species of clams in or near the Georges Bank area.

Four separate areas were explored: (a) the edge of Georges Bank, north of Cultivator Shoals, in depths of 30 to 40 fathoms, (b) the Bight of Clark in depths of 24 to 50 fathoms, (c) the southwest part of Georges Bank in depths of 24 to 36 fathoms, and (d) the western side of the Great South Channel near "Middle Rip," in the depth range of 26 to 50 fathoms.

A total of thirty-three 30-minute drags were made during this part of the cruise.

Three of the drags were made with a jet dredge (without manifold or jet) having a 48-inch blade width. The use of this dredge was discontinued following severe damage (un-repairable) to the blade. The remaining 30 drags were made with a conventional Fall River quahog dredge with 27 teeth spaced in a 48-inch opening; the teeth were set to fish into 9½ inches of the seabed. Both dredges were rigged to fish from the portside using the main trawl winch, the towing cable, and the forward gallows. The dredge used was hauled aboard with the "take-out" boom after each drag.

Fishing results during this part of the cruise were:

(1) On the edge of Georges Bank, north of Cultivator Shoals quahog or hard clam (*Venus mercenaria*) catches ranged from none to ¼ bushels per drag. Quantities of empty quahog shells were encountered; the largest single haul of shells was 12 bushels for one drag. While no surf clams (*Spisula solidissima*) were taken in that area, one drag yielded three dozen 4- to 6-inch empty surf-clam shells.

(2) At the Bight of Clark, five of the nine drags produced completely negative results. Of the remaining four drags, the largest catch consisted of 5 quahog clams and 12 empty shells. One-half bushel of large mussel shells (*Mytilus* sp.) were taken at another station.

(3) On the southwest part of Georges Bank, 14 drags were made of which 3 had completely negative results. Of the remaining 11 drags, the largest catches included 31 quahogs, 22 cherrystone quahogs (about 2½ to 3 inches), 70 mussels, one 4¼-inch surf clam, and several empty surf-clam shells (about 4 to 6 inches long).

(4) In the area on the western side of the Great South Channel, the fishing was very poor and the bottom hard. Of 4 drags made, only 1 yielded any indication of clams--only one 3-inch surf clam was taken in the first drag in that area.

On completion of the clam phase of the cruise, it was concluded that:

(1) The jet clam dredge is not suitable for use without the jet.

(2) Adjustments should be made to the Fall River dredge before it becomes a completely adequate piece of sampling gear for use aboard the Delaware.

(3) The Georges Bank area is much too large to have been surveyed in the period of time permitted. Several more cruises will be necessary before any conclusions can be made on clam populations.

SUMMER DISTRIBUTION AND ABUNDANCE OF GROUNDFISH SPECIES STUDIED:

M/V "Albatross IV" Cruise 63-5 Revised (July 18-August 19, 1963): To determine the summer distribution and relative abundance of groundfish species from the Bay of Fundy southward to Hudson Canyon, and to study food and its availability to a number of groundfish species at selected stations were the objectives of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Albatross IV. Hydrographic data were collected at each fishing station.



Fig. 1 - The Albatross IV, research vessel of the U. S. Bureau of Commercial Fisheries.

On this cruise, survey operations were conducted at selected stations along the in-shore waters of Massachusetts, the Gulf of Maine, along the western side of Nova Scotia, on Browns Bank and Georges Bank, and the southern New England area to Hudson Canyon.

A total of 188 groundfish survey stations were completed. All fish were measured and 1,715 stomachs of various species from different locations were examined. Scale samples were taken from 1,420 adult haddock, and over 1,000 young-of-the-year haddock were frozen for further study at the Bureau's biological laboratory at Woods Hole. Length-girth measurements were

made on 200 whiting (silver hake) and 100 red hake. Some 850 sea herring were frozen for the Bureau's Biological Laboratory at Boothbay Harbor, Me. Blood samples were taken from 9 species of groundfish. Invertebrates taken by the trawl were enumerated and samples preserved for further analysis.



Fig. 2 - Shows the station pattern for Cruise 63-5 of the research vessel Albatross IV, July 18-August 19, 1963.

A total of 248 bathythermograph casts were made during this cruise, and 605 seabed drifters were released.

At five specific locations, Nansen bottle casts were made at noon and midnight for temperature, salinity, and oxygen determinations, as well as for fluorimetric analysis and species composition of phytoplankton. Zooplankton samples were taken at 5 levels through the water column, and on the bottom with Miller samplers, and at the surface with a one-meter net at each of the 5 stations. A total of 515 digestive tracts were removed and frozen from selected fish species taken in the trawl.

Preliminary results of the cruise are summarized as follows: In the northern part of the cruise from Georges Bank to the Bay of Fundy, haddock and ocean perch (redfish) were found in abundance at specific locations. One-year-old haddock were also found in abundance, especially along the western side of Nova Scotia and on Browns Bank. Whiting were distributed throughout the study area. A concentration of that species was

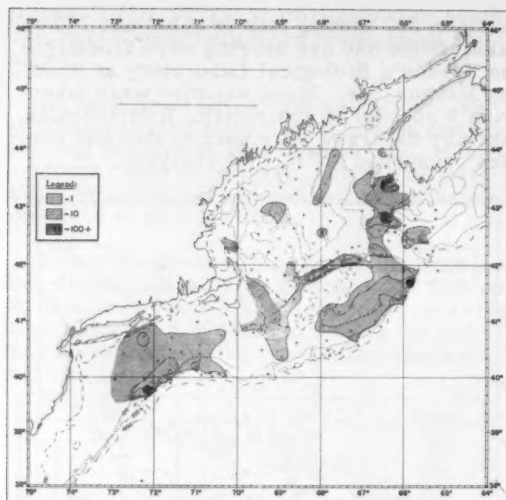


Fig. 3 - Shows the distribution and relative abundance of zero haddock on Cruise 63-5 by the *Albatross IV*. found on the western side of Georges Bank around Cultivator Shoal. In the southern area, squid were most abundant and finfish relatively low in abundance. Good catches of young-of-the-year haddock were made throughout the cruise (fig. 3). A total of 1,532 young haddock were taken at 91 stations (48 percent of the total 188). Those fish ranged from 5 to 16 centimeters (2.0 to 6.3 inches long) with a mean of 10 centimeters (3.9 inches). The distribution of the young fish ranged more to the southward, with 377 (25 percent) taken south of Georges Bank. Some young haddock were also taken in midwater with the Miller samplers, and in the bottom trawl when used as a midwater trawl.

Delaware cruise 63-5 was the first of a series of groundfish survey cruises to be conducted at various times of the year to study the distribution and relative abundance of all groundfish species.

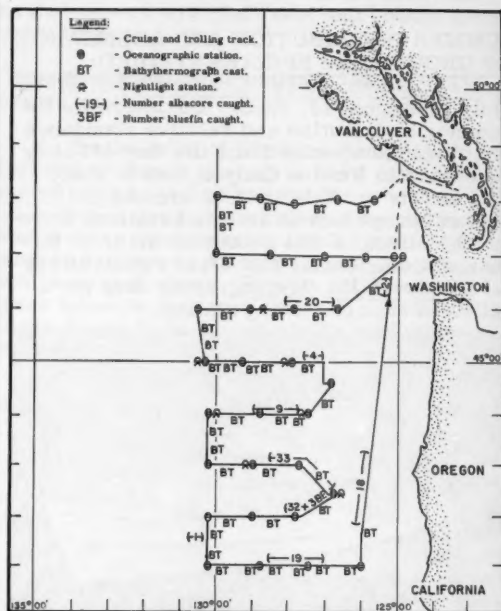


North Pacific Exploratory Fishery Program

ABUNDANCE AND DISTRIBUTION OF ALBACORE TUNA AND OTHER PELAGIC SPECIES STUDIED:

M/V "John N. Cobb" Cruise 60 (July 6-26, 1963): The principal objective of this

cruise was to obtain information on the abundance and distribution of albacore tuna (*Thunnus germon*) and other pelagic species by trolling jigs and nightlight observations. Conducted by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb, the cruise consisted of three weeks of exploratory fishing and oceanographic work off the coast of Washington, Oregon, and California. The vessel returned to her base at Seattle, Wash., July 26, 1963. Oceanographic



Trackline of the M/V John N. Cobb Cruise 60, July 8-26, 1963.

data, including salinity, oxygen, and chlorophyll determinations were obtained by participating staff members of the Bureau's Fisheries Biological Laboratory, San Diego, Calif.

Regions surveyed during the cruise extended from 48° N. to 41° N. latitude and offshore to 130°35' W. longitude. Most waters within 120 miles of the coast were avoided to keep from duplicating work being done by the Oregon State University vessel *Acona*, which was occupying inshore stations from 44°40' N. to 42°00' N. latitude.

A total of 34 oceanographic stations were occupied and 42 bathythermograph casts made. To explore for albacore, trolling was conducted along the trackline between oceano-

graphic stations. The exception occurred along part of the track on 41° N. latitude, where it became necessary to continue under way during night hours in order to maintain a desired schedule. Trolling was generally conducted during daylight hours using 7 lines towed at a speed of about 7 knots. A combination of red and white feather jigs was normally used but they were occasionally supplemented by light- or dark-colored bone-type jigs. Strikes and catches were distributed about equally between the seven lines. No attempts were made to circle the areas of highest albacore abundance.

A total of 140 albacore and 3 bluefin tuna (*Thunnus saliens*) were caught, of which 107 viable fish were tagged and liberated. Blood and heart samples were immediately taken from the other tuna and refrigerated for future studies. The albacore ranged from 52 to 83 centimeters (20.5 to 32.7 inches) long and weighed from 9 to 32 pounds. About 75 percent of them ranged between 62 and 68 centimeters (24.4 to 26.8 inches) long.

Observations at nightlight stations showed only meager concentrations of saury (*Colo-labis saira*), lanternfish (*Myctophidae*), or other marine life, except on one occasion when large numbers of small saury (3 to 4 inches long) surrounded the vessel. A continual watch was also maintained for the presence of marine life while the vessel was under way during daylight hours. Very few birds or marine animals were observed. Sparsely-scattered Spanish men-of-war were observed in only one small area of the track-line.

Note: See Commercial Fisheries Review, August 1963 p. 42.

PELAGIC TRAWL EFFICIENCY IN CATCHING SALMON TO BE EVALUATED:

M/V "John N. Cobb" Cruise 61: To evaluate the catching efficiency of the Cobb pelagic trawl for taking immature and mature salmon as compared to the catching efficiency of gill nets is the objective of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb.

The vessel left Seattle, Wash., on August 5, 1963, for six weeks of experimental high-seas pelagic trawling in certain offshore waters of the Pacific Ocean between Adak Island and Kodiak Island, Alaska. The exact areas to be investigated were to be deter-

mined by analysis of gill-net catches made by the Bureau's chartered vessel Bertha Ann prior to arrival of the John N. Cobb.

A series of four surface tows were to be made each day by the John N. Cobb relatively close to gill-net sets made by the Bertha Ann. Weather permitting, 2 tows of each series were to be made parallel, in opposite directions, and the remaining 2 tows made perpendicular, in opposite directions, to the string of set gill nets. Alternation between day-time towing and night-time towing was to occur at the end of each five days (all gill-net sets were to be made at night). During each five-day operating period, two tows were to be made in midwater with depth of the tow to be determined by analysis of echo-soundings.



Oceanography

SEABIRD-PLANKTON-OCEANOGRAPHY RELATIONSHIPS STUDY:

A contract covering the study of seabird-plankton-oceanography relationships in an area about 200 by 250 miles southwest of the Hawaiian Islands was awarded to the Smithsonian Institution by the U. S. Department of the Army, in July 1963. The program is part of the Army's medical-ecology research and is primarily concerned with birds as carriers (vectors) of disease. Information will be sought on the following questions: (1) How abundant are birds in the study area? (2) What are the diurnal and nocturnal difference in their abundance? (3) Where do the birds come from? (4) How is their abundance and distribution related to the abundance of plankton? and (5) What is the influence of physical oceanographic factors on bird distribution and abundance?

The U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu, Hawaii, is collaborating in the study and will make available for the program data that have been collected over a number of years on seabird studies in the Central Pacific Ocean.

NEW OCEANOGRAPHIC RESEARCH VESSEL FOR U. S. NAVY:

A new U. S. Navy oceanographic research vessel, the USNS Davis (T-AGOR 5), visited Washington, D. C., on May 31, 1963, for in-

stallation of oceanographic equipment, and also a plaque presentation ceremony. The vessel was docked at the Navy Yard Annex at the same time as the U. S. Bureau of Commercial Fisheries oceanographic research vessel *Albatross IV*, both of which were open for inspection by the general public.

The *USNS Davis* was launched at Sturgeon Bay, Wis., on June 30, 1962, and is the third of a new class of U. S. Navy oceanographic research vessels. Specifically designed for that purpose, she will be operated by the Military Sea Transportation Service under the technical control of the U. S. Hydrographic Office. Following the Washington, D. C., visit, the *Davis* proceeded to the West Coast where she is to be used as a floating platform for scientific experiments in the Pacific Ocean.



The new U. S. Navy oceanographic vessel, *USNS Davis* in full dress while on a visit to Washington, D. C.

The new research vessel is taking part in the Navy's ten-year oceanographic (TENCO) scientific study to advance knowledge of the ocean, and also study the effect of the ocean on sound transmission. The studies will contribute to the effectiveness of naval operations, naval weapons, and vessel equipment and design.

The technical dimensions of the vessel are: over-all length, 208 feet 10 inches; beam, 37 feet 5 inches; draft, 15 feet 2 inches; deadweight (loaded), 1,325 tons. Machinery includes a 1,000-hp. main propulsion unit; twin caterpillar 600-shaft-hp. generators; 1 solar gas turbine for silent

running; 175-hp. bow thruster unit with a 3-foot propeller for anchor or drift control maneuverability; 10-ton boom; a deep-sea coring and anchoring winch with 45,000 feet of tapered wire rope; an intermediate winch with 30,000 feet of wire rope.

Scientific equipment on the vessel includes a geomagnetic system consisting of proton precision magnetometer for measuring the strength of the earth's magnetism; a gravity meter to record the earth's gravity field; an electronic oceanographic system for measuring the sea's temperature, sound velocity, and pressure. She is also equipped with classic oceanographic equipment--bathythermographs, Nansen cast gear, and an underwater stereo camera.

The *Davis* will carry a crew of 19, and was scheduled to embark a group of 15 scientists on her arrival on station off the West Coast. The scientists represent the U. S. Naval Electronics Laboratory, San Diego, the U. S. Naval Test Station, China Lake, Calif., and the Applied Physics Laboratory, University of Washington, Seattle, Wash. (Military Sea Transportation Service, August 1963.)

KEEL LAID FOR NEW COAST AND GEODETIC SURVEY VESSEL:

Keel-laying ceremonies for the first of two Class II, Medium Survey Ships, to be built at a shipyard in Ft. Pleasant, W. Va., for the U. S. Coast and Geodetic Survey, were held on August 12, 1963.

The vessel, to be known as the *Fairweather*, will be equipped with specialized depth-recorders and positioning systems. It will be built of welded steel construction, strengthened for navigation in ice, and propelled by Diesel engines, with twin-screw, reversible-pitch propellers. The over-all length will be 220 feet and 8 inches, with a 42-foot beam, and loaded displacement of 1,615 tons. Service speed will be 14.5 knots with a cruising range of 8,000 nautical miles.

The propulsion equipment will be controlled by a centralized automated system. The vessel will have what is known as a "bow thruster" that delivers 5,000 pounds thrust on the bow either to port or starboard for maintaining position, slow maneuvering, and to facilitate docking.

The new survey vessel is to be named after the well known Fairweather Range and Mt. Fairweather, Alaska, which is near the approximate location of her first assignment. She will carry a complement of 12 officers and a crew of 60.

The Fairweather will be specifically designed to conduct hydrographic surveys--to provide nautical charts of United States coastal waters for safe navigation. She will be used to determine the depth and shape of the ocean bottom, the position of the submerged hills and valleys, as well as other navigational information. This information is vital in guiding ships through safe channels and avoiding the hidden dangers below the water's surface.

YOU CAN HELP IN THE STUDY OF OCEAN CURRENTS:

A study of the circulation of the waters and currents on the continental shelf off the east coast of the United States is being conducted by the Woods Hole Oceanographic In-

stitution. This program is operated in co-operation with the U. S. Fish and Wildlife Service and the Fisheries Research Board of Canada as well as with the various marine science laboratories along the Atlantic Seaboard. You can assist in this program by returning any drift bottle cards or sea-bed drifter labels you find. It is important to note carefully the location where the bottle or drifter was found and the date. A small reward will be sent to you by mail for this contribution to science, together with a notice of where the bottle or drifter was released. If you are a commercial fisherman, turn the drift bottle card or the label over to a Port Interviewer or Fishery Officer who will pay you the reward on the spot, the same way he does for fish tags.

About 30,000 bottles and drifters are released each year off the east coast of the United States on a year-around basis. The returned information is being collected to produce a series of maps which will be published in the American Geographical Society's Serial Atlas of the Marine Environment. This information will be useful in the study of the drift of fish eggs and larvae during their planktonic stages. (Woods Hole Oceanographic Institution, Woods Hole, Mass., July 23, 1963.)

OCEANOGRAPHIC DATA DISPLAY SYSTEM BEING DEVELOPED:

A prototype operating model of a World Oceanographic Data Display (WODD) system was unveiled this past summer at Maynard, Mass., to a select group of representatives from the Woods Hole Oceanographic Institution (WHOI) and National Oceanographic Data Center (NODC). The model was shown by a group of computer specialists working under the supervision of a former Harvard University professor who served as consultant-advisor on the project.

The system introduces an entirely new concept in oceanographic analysis and procedures for preparation of reports and atlases. By means of this system, an oceanographer can conduct analysis, quality control, or information retrieval on all available oceanographic station data through a series of visual displays generated by a digital computer on a cathode ray tube.

At this point in the system's development, one can display on the scope the following

R E W A R D



FOR RETURN OF
DRIFT BOTTLE CARD OR
SEABED DRIFTER TAG

with
WHERE & WHEN

PLACE DATE

* THE BOTTLE OR DRIFTER WAS CAUGHT

GIVE CARD OR TAG TO
PORT INTERVIEWER

OR MAIL TO

WOODS HOLE OCEANOGRAPHIC INSTITUTION
WOODS HOLE, MASS. 02543

■ A LETTER WILL BE SENT YOU DESCRIBING WHERE THEY WERE RELEASED



Fig. 1 - Oceanographers viewing some IGY tracks on display scope.

parameters at any standard depth: temperature, salinity, oxygen, specific volume anomaly, and dynamic depth. Other combinations of data display are also operational. Planning and programming are proceeding on isentropic and vertical section displays.

Figures 1 and 2 show oceanographers viewing some IGY¹/ tracks on the display scope and a close-up of the Meteor²/ data as it appears on the scope. In the close-up, the temperature distribution at 200 meters is displayed. Each dot represents the location of a specific oceanographic station. Stations reporting temperatures of 15.00° C. or higher at a depth of 200 meters appear as bright dots (4-point diamonds). Stations reporting temperatures lower than 15.00° C. (59° F.) at 200 meters appear as dim dots (single points). In this way, the temperature distribution is outlined on the visual display scope in the form of a brightly lit (or conversely, a dimly lit) assembly of dots. The temperature (or other parameter) scale may be run up or down automatically in any desired graduation. The appearance of the dots (bright or dim) will change with the changing parameter scale and the parameter value at any station can be determined.

Reference data appear on the screen if one uses an electronic pointer (light pen) to designate a particular station of interest.

By giving the system a command with an input-output typewriter, or by use of the light pen, the geographical area of interest can be enlarged to any degree desired. The final objective of this program is the design of a full-scale system and the establishment of

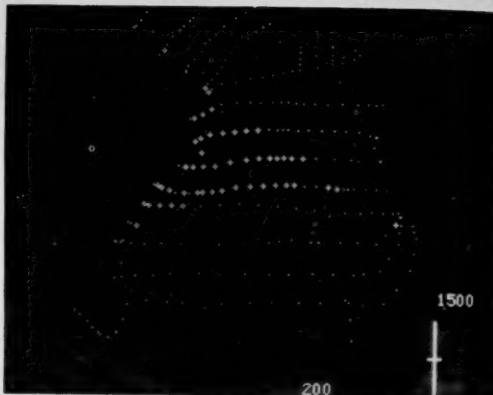


Fig. 2 - Close-up of oceanographic research Meteor data as it appears on display scope.

specifications for equipment and computer programs to handle all available world-wide oceanographic station data in a manner similar to that described.

Development of the project is continuing. At present the computer has a limited memory (400 oceanographic stations using a PDP-1 computer), but this appears to be no particular problem. A grid system is being planned for the screen and work is proceeding on isentropic and vertical profile displays.

¹/IGY (International Geophysical Year--data compiled by vessels Chain and Crawford of WHOI).

²/Vessel Meteor (German Atlantic cruises conducted in 1925-27).



Oysters

MARYLAND OBSERVATIONS ON 1963 SPATFALL:

Test shells exposed this season received few or no set prior to the last week in June 1963, according to a July 19 Oyster Report from the Chesapeake Biological Laboratory of the State of Maryland, Solomons. However, a strong wave of good setting occurred in late June and early July in Eastern Bay, upper Little Choptank River, St. Marys River, Smith Creek, and the lower Maryland side of the Potomac.

To that date a light but increasing set was occurring in the Harris Creek area, the Bay off Barren Island, the lower Patuxent, and Hooper Straits.

The Tar Bay Seed Area, Fishing Bay, Piney Island Swash, Holland Straits area, and

Pocomoke Sound had not yet received any significant set.

Setting tapered off in Eastern Bay, the Little Choptank, and Smith Creek. It reached during the week an exceptionally high peak in St. Marys River where a near record total of 10,659 spat were found on 20 shell faces that were overboard for seven days. Where those heavy sets occurred it was likely that most oysters were fairly well spawned out and that the major spawning for the season had been completed.

Obviously only a small percentage of the intense sets, that on some shells amounted to more than a thousand in one week, can possible survive due to lack of space. On natural cultch, and on planted shell that has accumulated considerable fouling, the set will be much lighter. However, it appears that a good quantity of high-count seed, capable of excellent yields when thinly planted on good growing bottom, will be available this fall and later from those areas already set. Transplanting is essential and should be done early when heavy sets occur if maximum use is to be made of the potential yield from such seed. When not transplanted, such thickly set oysters will mostly fail to reach marketable size and not only will be stunted, but will be thin and watery, misshapened and susceptible to severe losses from oyster parasites.



Pollution

OXYGEN DEFICIENCY RESULTING FROM SECONDARY POLLUTION DESTROYS FISH IN POTOMAC RIVER:

Secondary pollution is becoming a challenging problem to sanitary engineers and oceanographers interested in the conservation of aquatic resources, according to the scientist in charge of the Ecology-Pollution Department of the Virginia Institute of Marine Science. In the summer of 1963, he said, "Waste-disposal water may receive the most complete sanitary treatment possible and be entirely free of disease organisms, yet certain chemical changes resulting from waste treatment often touch off secondary pollution. Decomposition of organic matter releases phosphorus, nitrogen, and trace elements--the same nutrients used in commercial fertilizers--and they stimu-

late algal growth. . . . Although these microscopic plants actually give off oxygen to the water during daylight as a result of photosynthesis, they consume it during the hours of darkness when photosynthesis ceases. . . ." He pointed out that oxygen is needed by all living organisms. In areas where heavy concentrations of algae occur, the loss of oxygen at night can leave the water almost devoid of this vital element by early morning.

The Virginia scientist attributed extensive fish losses in the Potomac River in mid-1963 to an oxygen deficiency resulting from an algae "bloom." Scientists noted several peculiar characteristics of the Potomac fish kill. Better than 90 percent of the dead fish were white perch; the remainder consisted largely of eels, catfish, and yellow perch--all bottom-dwelling fish. Swimming near the surface in areas where perch had recently died, young menhaden were unaffected and menhaden are known to be extremely sensitive to toxicants in the water.

The selective kill pattern ruled out the presence of poisonous materials such as pesticides or industrial wastes. The water was unusually green, and had an extremely low dissolved oxygen content in the deeper layers during the early morning hours. The heavy growth of algae, low oxygen concentration in the early morning hours, and death of bottom fish established the cause of the kill--oxygen deficiency.

The Virginia Institute of Marine Science emphasized that the oxygen deficiency and fish losses were the result of several natural and manmade forces acting simultaneously on the Potomac River. These were: (1) a sudden increase in water temperature, (2) high solar radiation values, (3) relatively calm water conditions, (4) low dilution rates, and (5) artificially enriched waters. (The natural waters are receiving nitrogen, phosphorus and trace element enrichment from agricultural areas and from urban waste products. Sewage treatment plants are designed to convert and remove putrescible solids from sewage, and discharge an innocuous liquid into the receiving waters of creeks and rivers. But in the breaking down of raw sewage, significant quantities of nitrogen and phosphorus are converted to fertilizers that can be immediately used by aquatic plants.)

The five conditions described above produced an algae population that was much above that usually found in the Potomac River. High

populations of algae can seriously deplete the oxygen level of water at night, particularly near the bottom. In the Potomac River, only those species of fish that inhabit the deeper waters were killed. No fish were killed in the tributary creeks, and surface fish were not affected.

Scientists at the Virginia Institute of Marine Science consider the destruction of the utility of our water resources by a series of natural phenomena acting in conjunction with a change produced by man's activities to be a very serious potential threat. Our population is not only increasing, it is also concentrating into urban areas. This also concentrates the introduction of nutrients into near-by streams. Water uses destroyed as the result of artificial enrichment are just as serious a loss as if destroyed by direct pollution.

Speaking of both direct and secondary pollution, the Director of the Ecology-Pollution Department of the Institute said, "Modern science and technology is working toward prevention or curtailment of pollution of existing water supplies so that cities and industries may be assured of future growth. A slowdown of economic growth in certain States has already occurred due to water shortages. Our best hope for adequate water supplies by the year 2,000 lies in the re-use of water: one community far upstream using the water for domestic and industrial purposes, purifying it, and then returning it to the stream for use by communities located downstream." He pointed out that in order to do this it will be necessary to have a great deal of information that science and technology does not now have. Considerable research will be needed to acquire the necessary knowledge. (Virginia Institute of Marine Science, July 21, 1963.)

RADIOACTIVE WASTE DISPOSAL PROBLEMS:

With the increasing use of radioactive materials in industrial, military, and scientific processes, the problem of dumping radioactive wastes has become urgent, according to the Director of the Ecology-Pollution Department of the Virginia Institute of Marine Science. He pointed out that certain radioactive substances retain effectiveness over scores of years, and all of their effects are not yet known. If released in the aquatic

environment, many radioactive materials become strongly attached to silt or clay particles, and may remain in the area permanently. Science has yet to devise methods of flushing such materials from a specific area in the event of a large accidental release. (Virginia Institute of Marine Science, July 21, 1963.)

EFFECTS OF PESTICIDES ON FISH STUDIED AT TISHOMINGO FISH HATCHERY:

Preliminary tests of the effects of pesticides on fish, carried out by the U. S. Bureau of Sport Fisheries and Wildlife Fish Hatchery, Tishomingo, Okla., were completed in May 1963. The completion of pathological examinations of fish subjected to various concentrations of 2,4-D, heptachlor, and DDT will serve to establish necessary concentrations of pesticides and duration of subsequent studies on the effects of those pesticides.

Critical concentrations of 2,4-D on bluegill appear to lie between 1 and 3 p.p.m. (parts per million). A single exposure of bluegill to heptachlor at 0.025 p. p. m. showed no pathological effect on samples taken up to three months following exposure. Heptachlor incorporated in bluegill food at the rate of 1 mg./kg. of body weight showed no pathological effects after a period of 118 days. Rainbow trout exposed to a cumulative total of 40 p.p.b. (parts per billion) of DDT added to water at rates of 5 p.p.b. daily showed no pathological effects.



Salmon

EXCESSIVE ESCAPEMENT THREATENS NORTH PACIFIC RUN TO FRASER RIVER:

Excessive salmon escapement was the major problem facing the North Pacific Salmon Fisheries Commission this year, according to a July 30, 1963, statement by the Chairman of the Commission. The Commission regulates certain pink and sockeye salmon fisheries in designated waters adjacent to the United States-Canadian boundary of the State of Washington and the Province of British Columbia. The tie-up of the British Columbia fishing fleet and the small size of the United States fleet created the escapement problem.

A decision to increase United States fishing time to 4 days for the week ending August

3, 1963, was announced at a Commission meeting on July 30. At that time, the Commission's staff reported that more than 50 percent of the Fraser River sockeye salmon run had been escaping United States fishermen. Escapement up the Fraser River was estimated at about 100,000 fish per day. It was further reported that escapement to the Chilko River of the Fraser system had exceeded the desired amount.

"FIRST RETURNS" REPORTED ON HUGE FISH HATCHERY EVALUATION PROJECT IN NORTHWEST:

In July 1963, the "first returns" were coming in on "Operation Fin Clip," the gigantic fish-marking program launched last year by the U. S. Bureau of Commercial Fisheries in cooperation with the fishery departments of Washington and Oregon. "Operation Fin Clip" involves the marking of approximately 32 million fall chinook salmon in the Columbia River and its tributaries over a four-year period, reports the Bureau's Regional Director of Region 1.

Purpose of the project is to evaluate the contribution made to the commercial and sports catch of fall chinook salmon by Columbia River hatcheries. The Bureau, which contributes about \$2 million a year for operation and maintenance of 22 state and Federal hatcheries on the Columbia River and its tributaries, wants to find out how valuable those hatcheries are to the total fish catch



Fig. 1 - An early return of fin-clipped 2-year old fall chinook salmon. Biologist points toward area of missing fin.

in order to determine whether it should continue spending money for that purpose.

The Regional Director said a report by the Bureau's Columbia River Fishery Program Office showed that by the end of June a total of 14 of the first 8 million marked baby salmon which were placed into the river last year under the program had been recovered at scattered points along the Pacific Coast.

Recovery locations were Winchester Bay, Oreg.; Westport and Ilwaco, Wash.; and Moss Landing, just north of Monterey, Calif.

All but one of the 14 fish were caught by sports fishermen. The single exception was a fish taken by commercial troll in California.

"While 14 is not a great number, this is only the beginning. We expect the big majority of the fish released the first year will not be caught until they return from the ocean as four-year-olds in 1965," the Regional Director stated.



Fig. 2 - Biologists search for fin-clipped fall chinook salmon and collect biological data.

The recovery phase of the project will continue through 1969.

The Bureau will keep a close count of all the returning "Operation Fin Clip" fish which are caught. To accomplish this, fisheries biologists of the States of Washington, Oregon, and Alaska as well as biologists of the United States and Canadian governments are stationed at key landing spots from Alaska to San Francisco Bay to count the marked fish as they are brought in by both commercial and sports fishermen.

The Bureau's supervisor of appraisal studies of the Columbia River Fishery Program Office said that the 32 million fish involved in "Operation Fin Clip" are being marked in a special way so they can be differentiated from other marked fish. The adipose fin and the maxillary (protruding upper jaw bone) are being clipped with the left and right maxillary clipped on alternate years so that the year in which the fish were spawned can be determined when they are caught.

The first 14 returns were sent to the Oregon Fish Commission laboratory for analysis.



Shrimp

UNITED STATES SHRIMP SUPPLY INDICATORS, JULY 1963:

Item and Period	1963	1962	1961	1960	1959
..... (1,000 Lbs., Heads-Off)					
Total landings, So. Atl. and Gulf States:					
September	-	13,182	9,691	18,832	18,330
August	-	12,332	10,944	20,441	18,595
July	15,000	12,283	10,500	21,746	17,493
June	12,776	11,316	8,233	12,427	14,547
January-May	26,070	20,770	22,797	24,348	20,967
January-December	-	105,779	91,398	141,035	130,660
Quantity canned, Gulf States 1/:					
September	-	1,727	598	2,222	1,936
August	-	1,333	1,090	4,427	2,228
July	4,100	3,551	2,793	5,802	2,833
June	4,700	4,913	3,438	6,920	7,061
January-May	4,975	2,625	1,525	2,114	3,027
January-December	-	23,210	14,500	26,394	22,659
Frozen inventories (as of end of each mo.) 2/:					
September 30	-	12,843	13,361	24,492	26,119
August 31	-	12,754	12,728	20,171	23,780
July 31	3/	13,677	14,849	17,397	22,352
June 30 4/	24,047	13,796	19,416	15,338	19,283
May 31 4/	25,114	13,904	24,696	17,540	21,137
April 30 4/	24,954	15,637	27,492	20,502	23,331
March 31 4/	27,970	16,607	31,345	23,232	24,893
Imports 5/:					
September	-	9,696	8,629	8,190	7,541
August	-	7,381	6,743	6,406	5,107
July	3/	8,265	6,635	7,319	7,861
June	9,439	9,397	8,065	8,932	8,300
January-May	61,046	54,604	49,103	42,433	41,526
January-December	-	141,384	126,268	113,418	106,555
Ex-vessel price, all species, So. Atl. & Gulf Ports:					
October	-	90.0	88.7	53.0	44.4
September	-	90.9	70.1	52.2	46.4
August	-	83.6	66.1	52.0	46.9
July	6/57-78	82.1	55.8	54.6	49.2
June	6/72-83	84.4	53.7	64.1	60.7
May	6/80-86	83.7	52.8	62.9	63.3
April	6/82-90	82.2	55.4	60.6	65.2
March	6/85-92	80.9	56.0	56.3	67.6
Wholesale price froz. brown (5-lb. pkg.) Chicago, Ill.:					
October	-	108-115	83-90	69-73	59-62
September	-	113-118	87-90	65-70	62-64
August	-	110-112	76-81	64-67	62-64

(Table continued on next column)

Item and Period	1963	1962	1961	1960	1959
..... (1,000 Lbs., Heads-Off)					
July	80-97	3/	70-75	72-77	62-74
June	95-102	102-104	67-72	76-77	73-74
May	98-103	96-103	67-69	74-77	70-76
April	100-103	84-97	69-70	74-75	75-82
March	102-108	94-95	69-71	65-68	81-83

1/ Pounds of headless shrimp determined by multiplying the number of standard cases by 30.3. The figures in the section (Quantity canned, Gulf States) have been completely revised beginning with February 1963 on the basis of a new conversion factor (formerly 35.0 pounds per case).

2/ Raw headless only; excludes breaded, peeled and deveined, etc.

3/ Not available.

4/ Inventory of Mar. 31, 1963, includes 1,536,000 pounds; Apr. 30, 1963, includes 545,000 pounds; May 31, 1963, includes 551,000 pounds; and June 30, 1963, includes 667,000 pounds for firms not reporting previously.

5/ Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.

6/ Range in prices at Tampa, Fla.; Morgan City, La.; area; Port Isabel and Brownsville, Texas, only.

Note: Data for 1963 and 1962 are preliminary. June 1963 landings and quantity used for canning estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.



Transportation

NEW RAIL-BARGE BETWEEN SOUTHEASTERN ALASKA AND BRITISH COLUMBIA IN SERVICE:

On June 6, 1963, a shipment of frozen halibut was loaded into a mechanically refrigerated car at Saxman, Alaska (near Ketchikan), and moved by barge and railroad to Cincinnati, Ohio. This was the first time that a mechanically refrigerated railroad car moved directly from Alaska to the lower 48 states. The new ferry from Saxman to Prince Rupert, British Columbia, is the connecting link in the all-rail route. It signals the start of a transportation service which may offer cost advantages to some shippers. Rehandling charges involved in combination water and rail routing are avoided.

Carload shipments of frozen fishery products from the terminal at Saxman have also been made to Chicago, Ill., and Miami, Fla.



Tuna

ATLANTIC TUNA-OCEANOGRAPHIC STUDIES:

Scientists from the United States are joining those from several other nations in studying the commercially valuable tuna resources of the Atlantic Ocean. In the first part of June 1963, two U. S. Bureau of Commercial Fisheries research vessels, the Delaware and the Geronimo, completed cruises during which oceanographic, biological, and fishery

data and samples were collected in the Gulf Stream and Sargasso Sea. Earlier in 1963, the EQUALANT I survey in the equatorial Atlantic by vessels of the United States and six other nations added biological and oceanographic data about an area (from the coasts of Africa to South America, the Canary Islands south to Ascension Island) that may have a large undeveloped fishery potential. A similar international multiple-vessel survey, EQUALANT II, was scheduled for the same area in August 1963. Later this year, Norwegian scientists will study tuna in the waters of the northeastern Atlantic. In addition, the Fisheries Laboratory in Lowestoft, England, will send a vessel to the Bay of Biscay, to undertake a similar program.

The recent tuna and Gulf Stream study by the Delaware (cruise 63-4) from April 19-June 10, 1963, was sponsored by the Bureau of Commercial Fisheries, the Woods Hole (Mass.) Oceanographic Institution, and the National Geographic Society. Exploratory fishing and oceanographic observations were conducted from the Delaware at various places in the Atlantic Ocean from Gloucester, Mass., to a point southeast of the Azores. Tuna were caught during the cruise with Japanese-type long-line gear and trolling lines. Special midwater trawls were used for catching smaller fish; plankton nets and midwater trawls were used to collect eggs and larval fish. A wide array of instruments was used in gathering oceanographic data.



U. S. Bureau of Commercial Fisheries research vessel Geronimo.

On the return trip of the Delaware, the program of the vessel was coordinated with that of the Geronimo. The Geronimo, a Bureau research vessel, left its home port of Washington, D. C., May 7 for a 30-day cruise in the Gulf Stream and the northwestern Atlantic to test oceanographic and biological gear, to provide oceanographic and some

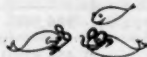
biological data to the Delaware, and to study the "scattering layers" (those layers of heavy concentration of small fish and other biological life near the surface of waters bordering on the Gulf Stream.)

The scientists aboard the Geronimo kept those on the Delaware informed of the location of the boundaries of the Gulf Stream. The Gulf Stream, while flowing in a generally northeasterly direction, varies considerably in width and location, sometimes shifting several miles a day. The western, or inshore, edge of the Gulf Stream is characterized by a sudden change in water temperature. During this cruise, temperature changes of as much as 25° F. in less than one mile were noted, although even more marked changes are common.

The Geronimo made three transects of the Gulf Stream--one east of Cape Hatteras where the Stream was 57 miles wide; another south of Connecticut where the Stream had narrowed to 35 miles; and the third south of Cape Cod where it had widened to 102 miles.

Additional research will be needed to determine (1) the extent and the possible value as food for tuna of the concentrations of small fish and other organisms found in the scattering layer; and (2) the effect on tuna and other marine life of the warm water pools which are often cut off from the main warm current of the Gulf Stream. The pools exist as "islands" of warm water, each rather quickly dissipated by mixing with colder inshore waters.

On returning to Washington, D. C., the Geronimo was outfitted for its part of the work in EQUALANT II. In late July 1963, the vessel left for waters off West Africa, the scene of operations during the International Cooperative Investigations of the Tropical Atlantic.



United States Fisheries

COMMERCIAL FISHERY LANDINGS, JANUARY-JUNE 1963:

Total Landings: Fish and shellfish landings in the United States during the first 6 months of 1963 were about 240 million pounds or 14 percent less than during the same period a year earlier. Production of edible fish was about 63 million pounds less than in the first half of 1962, and landings of nonedible species (principally menhaden) were down 177 million pounds.

United States Commercial Fishery Landings of Certain Species for Periods Shown, 1963 and 1962				
Species	Period	1/1963	1962	Total 1962
.....(1,000 Lbs.).....				
Anchovies, Calif. 2/..	6 mos.	2,100	1,100	2,252
Cod:				
Maine	5 mos.	1,000	1,091	2,260
Boston 3/	6 "	9,700	12,306	21,213
Gloucester 3/	6 "	1,900	1,845	3,823
Total cod		12,600	15,242	27,296
Haddock:				
Maine	5 mos.	900	717	2,545
Boston 3/	6 "	42,900	45,699	83,057
Gloucester 3/	6 "	11,900	9,758	16,089
Total haddock		55,700	56,174	101,691
Halibut: 4/				
Alaska	6 mos.	12,600	14,238	27,496
Wash. & Oreg. ...	6 "	6,500	7,207	12,404
Total halibut		19,100	21,445	39,900
Herring, Maine	5 mos.	100	3,796	156,699
Industrial Fish, Me. & Mass. 5/ ...	6 mos.	19,500	10,882	42,741
Mackerel:				
Jack 2/	6 mos.	43,000	38,294	93,414
Pacific 2/	6 "	15,200	16,104	44,980
Menhaden	6 mos.	649,400	835,443	2,249,100
Ocean perch:				
Maine	5 mos.	21,800	27,993	69,453
Boston	6 "	300	295	909
Gloucester	6 "	22,300	32,231	53,619
Total ocean perch.		44,400	60,519	123,981
Salmon, Alaska ... to July 14		59,900	77,740	280,000
Scallops, sea, New Bedford (meats) ...	6 mos.	7,900	9,927	19,399
Shrimp (heads-on):				
So. Atl. & Gulf. ...	7 mos.	85,600	70,547	167,800
Washington	6 "	400	607	1,400
Squid, Calif. 2/	6 mos.	6,700	5,716	7,056
Tuna, Calif. to July 20		123,100	160,858	284,559
Whiting:				
Maine	5 mos.	4	3	17,831
Boston	6 "	70	77	212
Gloucester	6 "	11,800	8,207	53,183
Total whiting		11,874	8,287	71,226
Total all above items		1,156,574	1,392,751	3,713,404
Other 6/		299,102	303,667	1,526,296
Grand total		1,455,676	1,696,418	5,239,700

1/ Preliminary.
2/ Cannery receipts.
3/ Landed weight.
4/ Dressed weight.
5/ Excludes menhaden.
6/ Includes landings for species not listed.
Note: Fish generally converted to round weight, crustaceans to weight in the shell, and mollusks reported in meats only.

Menhaden: During the first 6 months of 1963, landings amounted to 649 million pounds--down 186 million pounds as compared with 1962. Landings increased slightly in the Gulf area, but were down substantially all along the Atlantic Coast.

Tuna: Landings (including bonito) in California totaled 126 million pounds to July 20, 1963--a decrease of about 36 million pounds as compared with the same period in 1962. Purse-seine landings in California dropped off 23 million pounds, and clipper-fleet landings amounted to only half of the 21 million pounds for that period in 1962. Transshipments of U. S.-caught fish from South America declined from 5 million pounds in 1962 to 2 million pounds in 1963.

Salmon: On the basis of the reported pack of canned salmon, it was estimated that the Alaska catch to July 14, 1963, totaled 60 million pounds--a decline of about 18 million pounds or 23 percent as compared with the same period of 1962.

Groundfish: At mid-year, 1963 landings of cod (13 million pounds) and ocean perch (44 million pounds) were down 3 and 16 million pounds, respectively, while landings of haddock (55.7 million pounds) remained the same as for the same period in 1962.

Scallops: New Bedford landings during the first half of 1963 amounted to 8 million pounds--falling below the 1962 yield for this period by 2 million pounds or 21 percent.

Shrimp: South Atlantic and Gulf States landings during the first 7 months of 1963 totaled about 86 million pounds--15 million pounds more than in 1962.

Whiting: The catch at Gloucester through June 1963 (12 million pounds) was 4 million pounds or 44 percent greater than the quantity taken to that date in 1962.

* * * * *

FISH STICKS AND PORTIONS PRODUCTION, APRIL-JUNE 1963:

United States production of fish sticks amounted to about 19.4 million pounds and that of fish portions was 24.2 million pounds during the second quarter of 1963, according to preliminary data. This was a gain of 17.7 percent in fish sticks and 32.0 percent in portions as compared with the same quarter of 1962. The increase was due to a greater production of raw breaded portions (up 5.4 million pounds) and cooked fish sticks (up 3.4 million pounds).

Cooked fish sticks (18.5 million pounds) made up 95.4 percent of the fish stick total. The remaining 4.6 percent consisted of raw fish sticks. A total of 23.6 million pounds of breaded fish portions (of which 19.5 million pounds were raw) and 642,000 pounds of unbreaded portions were processed during the second quarter of 1963.

Table 1 - U.S. Production of Fish Sticks by Months and Type, April-June 1963 1/

Month	Cooked	Raw	Total
.....(1,000 Lbs.).....			
April	6,438	249	6,687
May	5,831	334	6,165
June	6,236	302	6,538
Total 2nd Qtr. 1963 1/	18,505	885	19,390
Total 2nd Qtr. 1962	15,090	1,389	16,479
Total 1st 6 mos. 1963 1/	41,062	2,054	43,116
Total 1st 6 mos. 1962	34,513	2,592	37,105
Total Jan.-Dec. 1962	66,801	5,416	72,217

1/ Preliminary.

Table 2 - U. S. Production of Fish Sticks by Areas, April-June 1963 and 1962

Area	1/1963		2/1962	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States . . .	21	16,207	23	13,229
Inland & Gulf States . . .	5	1,985	5	2,030
Pacific Coast States . . .	10	1,198	9	1,220
Total	36	19,390	37	16,479

1/Preliminary.
2/Revised.

Table 3 - U.S. Production of Fish Sticks by Months, 1959-1963

Month	1/1963	2/1962	2/1961	1960	1959
 (1,000 Lbs.)				
January	7,634	6,082	6,091	5,511	6,277
February	8,246	6,886	7,097	6,542	6,352
March	7,846	7,658	7,233	7,844	5,604
April	6,687	5,719	5,599	4,871	4,717
May	6,165	5,643	5,129	3,707	4,407
June	6,538	5,117	4,928	4,369	4,583
July	-	3,740	3,575	3,691	3,790
August	-	5,760	6,927	5,013	3,879
September	-	6,582	5,206	5,424	5,353
October	-	6,698	6,133	6,560	5,842
November	-	6,305	6,288	6,281	4,831
December	-	6,027	5,618	5,329	4,743
Total	-	72,217	69,824	65,142	60,378

1/Preliminary.
2/Revised.

Table 4 - U.S. Production of Fish Portions by Months and Type, April-June 1963 1/

Month	Breaded			Un- breaded	Total
	Cooked	Raw	Total		
 (1,000 Lbs.)				
April	1,457	6,362	7,819	185	8,004
May	1,760	5,372	7,132	279	7,411
June	846	7,795	8,641	178	8,819
Tot. 2nd Qtr. 1963 1/	4,063	19,529	23,592	642	24,234
Tot. 2nd Qtr. 1962	3,722	14,160	17,882	481	18,363
Tot. 1st 6 mos. 1963 1/	8,132	38,919	47,051	1,452	48,503
Tot. 1st 6 mos. 1962	6,816	28,955	35,771	1,065	36,836
Tot. Jan.-Dec. 1962	14,007	62,290	76,297	2,381	78,678
1/Preliminary.					

1/Preliminary.

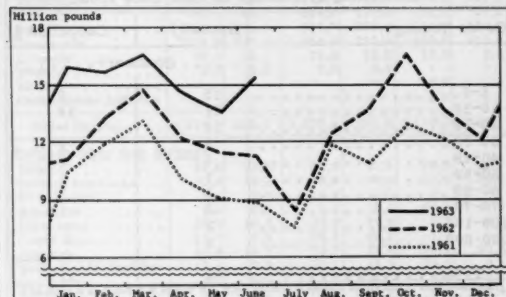
Table 5 - U. S. Production of Fish Portions by Areas, April-June 1963 and 1962

Area	1/1963		2/1962	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States . . .	23	14,456	23	9,937
Inland & Gulf States . . .	6	8,995	12	7,857
Pacific Coast States . . .	9	783	7	569
Total	38	24,234	42	18,363

1/Preliminary.
2/Revised.

Table 6 - U. S. Production of Fish Portions by Months, 1959-1963

Month	1/1963	2/1962	2/1961	1960	1959
 (1,000 Lbs.)				
January	8,199	5,077	4,303	3,632	2,692
February	7,383	6,360	4,902	3,502	3,025
March	8,687	7,036	5,831	4,706	3,225
April	8,004	6,408	4,484	3,492	2,634
May	7,411	5,818	3,879	3,253	2,684
June	8,819	6,137	4,039	3,995	3,247
July	-	4,679	3,962	4,088	2,227
August	-	6,687	4,963	3,558	2,796
September	-	7,180	5,745	4,631	3,558
October	-	9,871	6,759	5,275	4,314
November	-	7,406	5,789	4,790	3,483
December	-	6,019	5,191	4,459	3,262
Total	-	78,678	59,847	49,381	37,147

1/Preliminary.
2/Revised.

U. S. production of fish sticks and portions, 1961-63.

Plants on the Atlantic Coast produced the bulk of the fish sticks and portions—30.7 million pounds. The Gulf and Inland States produced 11.0 million pounds, and the Pacific Coast States 1.9 million pounds.



U. S. Fishing Vessels

DOCUMENTATIONS ISSUED AND CANCELLED, JUNE 1963:

During June 1963, a total of 62 vessels of 5 net tons and over was issued first documents as fishing craft, as compared with 52 in June 1962. There were 31 documents cancelled for fishing vessels in June 1963 as compared with 34 in June 1962.

Table 1 - U. S. Fishing Vessels 1/-Documents Issued and Cancelled, by Areas, June 1963 with Comparisons

Area (Home Port)	June		Jan.-June		Total
	1963	1962	1963	1962	
 (Number)				
Issued first documents 2/:					
New England	-	2	10	15	28
Middle Atlantic	1	-	8	2	3
Chesapeake	5	5	22	21	43
South Atlantic	6	4	33	17	47
Gulf	18	15	115	53	110
Pacific	30	25	108	87	130

(Table continued on next page)

Area (Home Port)	June		Jan.-June		Total
	1963	1962	1963	1962	1962
	(Number)				
Great Lakes	1	1	3	1	5
Puerto Rico	1	-	-	-	2
Total	62	52	301	196	368
Removed from documentation 3/:					
New England	2	-	26	11	24
Middle Atlantic	5	2	27	26	39
Chesapeake	-	2	10	8	23
South Atlantic	7	2	34	18	38
Gulf	7	13	62	59	104
Pacific	8	10	51	69	111
Great Lakes	2	4	9	12	22
Hawaii	-	-	1	3	3
Puerto Rico	-	1	-	1	1
Total	31	34	220	207	365

1/For explanation of footnotes, see table 2.

Table 2 - U. S. Fishing Vessels--Documents Issued and Cancelled, by Tonnage Groups, June 1963

Gross Tonnage	Issued 2/	Cancelled 3/
	(Number)	
5-9	15	9
10-19	21	13
20-29	13	-
30-39	2	2
40-49	4	2
50-59	1	1
60-69	1	3
70-79	3	1
100-109	1	-
800-809	1	-
Total	62	31

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.

2/Includes 1 redocumented vessel in June 1963 previously removed from records. Vessels listed first documents as fishing craft were built: 45 in 1963; 1 in 1961; 1 in 1960; 14 prior to 1951; and 1 unknown.

3/Includes vessels reported lost, abandoned, forfeited, sold alien, etc.

Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

FINANCIAL ASSISTANCE FOR VESSELS AND GEAR AVAILABLE FROM THE FISHERIES LOAN FUND:

The Fisheries Loan Fund was authorized by the Fish and Wildlife Act of 1956. This Act provides authority for the Secretary of the Interior to make loans for financing and refinancing operations, maintenance, repair, replacement, and equipment of fishing gear and vessels. This program is still active and loans are available for the purposes mentioned.

As of July 31, 1963, a total of 1,273 loan applications for \$34,736 had been received by the U. S. Bureau of Commercial Fisheries, the agency administering the Federal Fisheries Loan Fund. During that period, 674 loans



were approved for \$15,484,000. These loans are made for a maximum of 10 years at 5 percent simple interest.

MORTGAGE INSURANCE PROGRAM ASSISTS FINANCING OF VESSEL CONSTRUCTION:

The Fishing Vessel Mortgage Insurance Program is designed to assist the financing of the construction of a new vessel in the same manner that the Federal Housing Administration (FHA) helps finance home construction. The funds are obtained from a commercial lender but the Department of the Interior insures the mortgage--thus guaranteeing the lender that he will have no losses.

This program, which is administered by the U. S. Bureau of Commercial Fisheries, can only be used to finance the construction, reconstruction, or reconditioning of fishing vessels. To be eligible, the work must be done by the low bidder after competitive bidding. The mortgage cannot exceed 75 percent of the cost of the work being performed.

NEW FISHERY RESEARCH VESSEL OF BUREAU OF COMMERCIAL FISHERIES VISITS NATION'S CAPITAL:

The new fishery-oceanographic research vessel (Albatross IV) of the U. S. Bureau of Commercial Fisheries was in Washington, D. C., May 30-June 2, 1963, for inspection by the general public and Federal Government officials. The Secretary of the Interior



Fig. 1 - The Albatross IV, docked in Washington, D. C., was inspected by the general public May 30-June 2.



Fig. 2 - Visitors aboard the *Albatross IV* in Washington, D. C., inspecting the vessel's otter-trawl net which is spread out for display on the stern deck. Note the roller and chute for the net at the rear of the photo.

Stewart L. Udall, on May 9, commissioned the vessel at its home port, Woods Hole, Mass., where one of the Bureau's fishery biological laboratories is located.

Research to be conducted by the vessel will include charting the distribution and abundance of groundfish and scallops, environmental factors causing seasonal and long-term fluctuations in fish stocks, collection of bottom organisms that form the food supply for groundfish, and investigation of plankton populations and general oceanographic conditions.

Note: See *Commercial Fisheries Review*, June 1963 p. 48; January 1963 p. 56; July 1962 p. 42.



U. S. Foreign Trade

AIRBORNE IMPORTS OF FISHERY PRODUCTS, MARCH-APRIL 1963:

Airborne fishery imports into the United States in March 1963 amounted to 743,915 pounds valued at \$377,344, a decrease of 6.1 percent in quantity and 10.3 percent in value from those in the previous month. In April 1963, there was a slight increase with imports of 760,359 pounds valued at \$365,682.

Total airborne imports in January-April 1963 were 3.4 million pounds valued at about \$1.8 million as compared with the same period in 1962 of 2.5 million pounds valued at \$1.1 million. The increase was due mainly to larger shipments of shrimp and spiny lobsters.

Raw headless shrimp continued to make up the bulk of the airborne shrimp imports--in March 1963, shipments consisted of 558,876 pounds of fresh or frozen raw headless, 20,869 pounds of frozen peeled and deveined, and 685

U. S. Airborne Imports of Fishery Products, January-April 1963 with Comparative Data						
Product and Origin ^{2/}	Mar.-Apr. 1963		Jan.-Apr. 1963		Jan.-Apr. 1962	
	Qty. ^{3/}	Value ^{4/}	Qty. ^{3/}	Value ^{4/}	Qty. ^{3/}	Value ^{4/}
	1,000 Lbs.	US\$ 1,000	1,000 Lbs.	US\$ 1,000	1,000 Lbs.	US\$ 1,000
Fish:						
Mexico	59.3	18.1	99.2	31.1	153.0	26.1
British Honduras ..	10.7	2.9	30.6	7.6	-	-
Honduras	7.0	2.0	15.5	4.0	-	-
Japan	2.0	8.2	2.0	8.2	-	-
United Kingdom	0.4	1.2	1.1	2.7	-	0.3
Iran	1.2	7.4	1.2	7.4	1.0	-
France	-	-	0.4	0.3	0.2	0.5
Rumania	-	-	-	-	0.1	1.0
Panama	-	-	-	-	7.8	1.3
Ireland	-	-	0.8	0.3	-	-
Total Fish	80.6	39.8	150.6	61.6	162.1	29.2
Shrimp:						
Guatemala	39.2	21.6	101.5	53.9	66.0	34.1
El Salvador	37.7	27.6	145.2	101.7	125.7	84.7
Honduras	5.8	3.3	5.8	3.3	-	-
Nicaragua	183.9	58.1	193.4	61.6	603.5	201.6
Costa Rica	73.6	36.1	284.0	137.3	52.4	21.2
Panama	202.3	108.9	607.7	326.4	384.0	194.5
Venezuela	658.6	322.6	1,464.8	715.4	885.8	415.9
Ecuador	72.4	23.1	72.4	23.1	12.2	3.4
France	2.6	0.9	2.6	0.9	-	-
Mexico	-	-	-	-	6.0	3.9
Netherlands Antilles	-	-	-	-	3.0	2.7
Total Shrimp	1,276.1	602.2	2,877.4	1,423.6	2,119.0	962.1
Shellfish other than Shrimp:						
Mexico	22.8	13.3	70.9	41.5	27.6	16.0
British Honduras ..	30.9	22.0	96.2	76.4	61.9	38.6
El Salvador	5.0	3.6	5.0	3.6	-	-
Honduras	1.2	0.5	1.6	0.8	60.2	47.7
Nicaragua	20.9	14.7	47.8	37.9	0.4	0.3
Costa Rica	11.7	6.5	73.8	60.1	1.4	1.2
Jamaica	32.8	24.7	44.3	33.4	28.2	20.3
Netherlands Antilles	12.5	8.4	29.1	18.3	14.3	9.3
Colombia	2.9	4.5	2.9	4.5	0.1	0.2
Ecuador	1.1	0.3	2.2	1.8	0.9	0.7
Tunisia	0.5	0.6	0.5	0.6	-	-
Leeward and Wind- ward Islands	1.6	0.5	1.6	0.5	14.8	5.2
British Guiana	1.7	0.3	1.7	0.3	-	-
Canada	1.8	0.7	1.8	0.7	-	-
Venezuela	-	-	13.7	6.0	22.3	13.6
Panama	-	-	-	-	1.0	1.0
Guatemala	-	-	-	-	2.4	1.9
Japan	-	-	-	-	5/	0.3
France	-	-	-	-	0.2	0.4
Dominican Republic	-	-	6.2	5.0	-	-
Total Shellfish (ex- cept shrimp)	147.4	100.6	401.3	291.4	235.8	157.0
Grand Total	1,504.0	742.4	3,429.5	1,776.6	2,516.9	1,148.3
1/Imports into Puerto Rico from foreign countries are considered to be United States imports and are included. But United States trade with Puerto Rico and with United States possessions and trade between United States possessions are not included.						
2/When the country of origin is not known, the country of shipment is shown.						
3/Gross weight of shipments, including the weight of containers, wrappings, crates, and moisture content.						
4/F.o.b. point of shipment. Does not include U. S. import duties, air freight, or insurance.						
5/Less than 1,000 pounds.						
Note: These data are included in the over-all import figures for total imports, i.e., these imports are not to be added to other import data published.						
Source: United States General Imports of Merchandise, FT 380, March and April 1963, U. S. Bureau of the Census.						

pounds of unclassified shrimp; in April 1963, shipments consisted of 633,127 pounds of fresh or frozen raw headless, 20,825 pounds of frozen peeled and deveined, and 21,764 pounds of unclassified shrimp. Approximately 80 percent of the total airborne shrimp imports in March and April 1963 entered through the U. S. Customs District of Florida. The remainder entered through the Customs Districts of New Orleans (La.) and Los Angeles (Calif.).

Airborne imports of shellfish other than shrimp in March 1963 included 77,106 pounds of spiny lobster tails and 4,340 pounds of unclassified spiny lobster products. In April 1963, airborne spiny lobster tail arrivals consisted of 20,039 pounds of lobster tails and 4,450 pounds of unclassified spiny lobster products. The spiny lobster airborne imports originated in Central and South American countries and entered through the Customs Districts of Florida and Puerto Rico.



The leading finfish product imported by air in the first four months of 1963 was fish fillets (mostly from Mexico, Honduras, and British Honduras).

The data as issued do not show the state of all products--fresh, frozen, or canned--but it is believed that the bulk of the airborne imports consist of fresh and frozen products.

EDIBLE FISHERY PRODUCTS, JUNE 1963:

United States imports of edible fishery products in 1963, in general, reflect the failure of the California sardine fishery last season by more imports of canned sardines not-in-oil; the comeback of the Maine sardine fishery this season by the drop in imports of canned sardines in-oil; the sharp drop in demand for canned tuna in the second quarter of this year by substantial drops in the imports of canned tuna in-brine and frozen tuna.

Imports of fresh, frozen, and processed edible fish and shellfish into the United States in June 1963 were down 4.6 percent in quantity and 9.6 percent in value from the previous month. In June, imports were down for canned tuna in brine from Japan; frozen swordfish from Japan; canned sardines (in-oil and not-in-oil) from Norway, Portugal, Japan, and South Africa Republic; canned crab meat from Japan; frozen spiny lobsters from Australia and South Africa Republic; frozen shrimp from El Salvador, British Guiana, and India. The decline was partly offset by increased imports of frozen groundfish fillets from Greenland, Canada, Iceland, and Norway; frozen flounder fillets from Canada; fresh swordfish from Canada; frozen tuna (other than albacore) from Australia and Trinidad; fresh and frozen salmon from Canada.

Compared with the same month in 1962, imports in June 1963 were the same in quantity, but down 5.7 percent in value. This June there was a heavy cutback in imports of canned tuna in brine, canned sardines (in-oil and not-in-oil), frozen spiny lobsters, and canned salmon. But imports were up for frozen groundfish (principally blocks and slabs, haddock, and cod), fresh swordfish from Canada, frozen albacore tuna from Japan, and other frozen tuna from Peru.

In the first 6 months of 1963, imports were down 5.0 percent in quantity and 3.0 percent in value. Fluctuations in individual import items were much greater than the over-all totals indicate. Imports were down sharply in 1963 for canned tuna in brine and frozen tuna (mostly from Japan), canned sar-

dines in oil, frozen spiny lobsters, and canned salmon. On the other hand, there was a large increase in imports of canned sardines not-in-oil (mostly from South Africa Republic) and frozen shrimp, as well as heavier shipments of frozen groundfish fillets, fresh swordfish from Canada, canned crab meat from Japan, and frozen frog legs from India.

U. S. Imports and Exports of Edible Fishery Products,
June 1963 with Comparisons

Item	Quantity				Value			
	June		Jan.-June		June		Jan.-June	
	1963	1962	1963	1962	1963	1962	1963	1962
	..(Millions of Lbs.)..				..(Millions of \$)..			
Imports:								
Fish & Shellfish:								
Fresh, froz., & processed ¹ . . .	84.1	84.1	531.5	559.7	30.0	31.8	185.4	191.1
Exports:								
Fish & Shellfish:								
Processed only ² (excluding fresh & frozen). . . .	2.0	3.2	16.6	17.4	1.0	1.0	6.6	6.9

¹/Includes pastes, sauces, clam chowder and juice, and other specialties.

Exports of processed fish and shellfish from the United States in June 1963 dropped only slightly from those of the previous month but the value from May to June was up 42.9 percent. The June exports of canned mackerel, sardines, and squid were below those of the previous month but the value from May to June increased sharply because of substantially larger shipments of higher-priced products--canned shrimp (up 245 percent) and canned salmon (up 17.6 percent).

Compared with the same month in 1962, the exports in June 1963 were down 37.5 percent in quantity, although the value of the exports was the same in both months. A sharp drop in exports of canned sardines (not in oil) and canned squid (none shipped to the Philippines) this June was offset by larger shipments of most other canned fish export items.

Processed fish and shellfish exports in the first 6 months of 1963 were down 4.6 percent in quantity and the value dropped 4.4 percent from the same period in 1962. The drop in value was due to a general decline in the price of canned fishery products in 1963. The decline in quantity was due mainly to lower shipments of canned sardines and a drop in exports of canned mackerel to the Congo Republic. There were increases in exports of canned salmon and canned squid and in particular canned shrimp which increased 49.5 percent from the same period in 1962. Although not covered in the table, exports of frozen shrimp were up sharply in the first half of 1963 (increase mostly in exports to Japan), and there was a substantial increase in exports of frozen salmon.

IMPORTS OF CANNED TUNA UNDER QUOTA:

United States imports of tuna canned in brine during January 1-August 3, 1963, amounted to 29,036,028 pounds (about 1,382,700 std. cases), according to data compiled by the Bureau of Customs. This was 10.9 percent less than the 32,594,317 pounds (about 1,552,100 std. cases) imported during January 1-July 28, 1962.

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1963 at the 12½-percent rate

of duty is limited to 63,130,642 pounds (or about 3,006,221 std. cases of 48 7-oz. cans). Any imports in excess of the quota are dutiable at 25 percent ad valorem.

IMPORTS OF FISH MEAL AND SCRAP BY CUSTOMS DISTRICTS, JUNE 1963:

About 87 percent of the fish meal and scrap imports in June 1963 entered through the Customs Districts of Mobile (Ala.), Washington, Galveston (Tex.), and Georgia.

U. S. Imports of Fish Meal and Scrap by Customs Districts,
June 1963

Customs Districts	June 1963
	Short Tons
Maine and New Hampshire.....	50
Vermont.....	35
Massachusetts.....	60
New York (N. Y.).....	300
Philadelphia (Pa.).....	100
Maryland.....	1/1,298
Georgia.....	2,147
Mobile (Ala.).....	4,058
Galveston (Tex.).....	2,372
Los Angeles (Calif.).....	2/1,009
San Francisco (Calif.).....	1,187
Oregon.....	165
Washington.....	3,713
Hawaii.....	55
Dakota.....	245
Duluth (Minn.) and Superior (Wis.).....	1,445
Michigan.....	3/ 233
Total	18,452

1/Includes 220 tons of fish meal classified as fertilizer.

2/Includes 347 tons of fish meal classified as fertilizer.

3/Includes 24 tons of fish meal classified as fertilizer.

Note: A list of the entry ports included within each Customs District is given in Schedule D, Code Classification of United States Customs Districts and Ports, which may be obtained free by writing to the Foreign Trade Division, Bureau of the Census, U. S. Department of Commerce, Washington 25, D. C.



Wholesale Prices

EDIBLE FISH AND SHELLFISH, JULY 1963:

With prices in July 1963 down for almost all major fishery products, there was a 3.9-percent drop from the previous month in the wholesale price index for edible fishery products. The exceptions were higher prices in July for salmon and fresh-water fish, while prices for a number of other products held at the same level as in June. Compared with a year earlier, the index this July at 110.0 was down 7.6 percent. Greater supplies of most major fishery products this year account for the lower prices.

At New York City, higher prices for fresh dressed king salmon were largely responsible for a 0.3-percent increase in the subgroup index for drawn, dressed, or whole finfish. Prices for Great Lakes fresh-water fish at New York City and Chicago also rose from June to July. Ex-vessel prices for large haddock at Boston (down 14.8 percent) dropped sharply from the much higher June prices (caused by lighter-than-normal haddock landings). Fresh halibut prices at New York City were steady in July remaining at the same level as in June, but were 20 percent lower than in July a year earlier because of larger stocks in cold-storage at the beginning of the season. Compared with July 1962, the



subgroup index this July was down 10.8 percent—prices for all items (except fresh yellow pike) in the subgroup were lower than in the same month a year earlier.

Seasonal supplies of fresh shrimp from the South Atlantic States were more liberal at New York City during July and this brought prices down sharply from the high June level. A 19.8-percent drop in New York City fresh shrimp prices combined with lower prices for fresh haddock fillets at Boston (down 7.3 percent) were responsible for a 10.6-percent drop from June to July in the subgroup price index for processed fresh fish and shellfish. As compared with the same month in 1962, the subgroup index this July was up 6.5 percent due to substantially higher prices for fresh shucked oysters and slightly higher prices for fresh shrimp.

The lower price trend in the processed frozen fish and shellfish subgroup from June to July was because of the price drop for frozen shrimp at Chicago (down 7.5 percent). Compared with July 1962, frozen shrimp prices this July were 10.2 percent lower because of better fishing. There was a slight decline in prices for frozen ocean perch fillets following the steady and unchanged price level of the previous two months, but those prices were still 12.8 percent higher than a year earlier. July prices for other frozen fillets held at the same level as in June. Frozen fillet prices this July were all higher than a year earlier. The subgroup index at 107.9 this July dropped 4.6 percent from the previous month and was below the same month a year earlier by 2.8 percent.

A decline in prices for canned Maine sardines (down 8.0 percent) was mainly responsible for a 1.3-percent drop from June to July in the canned fishery products subgroup price index. Stocks of canned Maine sardines on July 1, 1963, were up substantially from those of a year earlier when the pack was considerably below normal. In mid-April when the new canning season opened, the carry-over from the previous season at the canners' level was more than 600,000 cases. By the end of July 1963, the new season pack was about 700,000 cases. Prices for canned tuna this July dropped slightly (down 0.9 percent) and were lower than a year earlier by 8.3 percent. Compared with July 1962, prices this July were sharply lower (down 14.4 percent) for all canned fishery products because of larger stocks.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, July 1963 with Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes (1967-59=100)			
			July 1963	June 1963	July 1963	June 1963	May 1963	July 1962
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					110.0	114.4	115.9	119.0
Fresh & Frozen Fishery Products:					114.3	120.5	122.4	118.5
Drawn, Dressed, or Whole Fish:					110.0	109.7	115.4	123.3
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.11	.13	83.4	97.9	86.2	98.6
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.36	.36	106.4	106.4	105.9	133.0
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.88	.85	122.3	118.8	127.5	136.2
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.59	.57	88.0	84.3	110.4	89.5
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.62	.47	100.7	76.2	108.1	77.8
Processed, Fresh (Fish & Shellfish):					120.8	135.1	133.9	113.4
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.39	.42	93.5	100.8	95.9	94.7
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.91	1.14	106.7	133.0	134.8	105.5
Oysters, shucked, standards	Norfolk	gal.	8.50	8.50	143.3	143.3	139.1	126.5
Processed, Frozen (Fish & Shellfish):					107.9	113.1	114.0	113.3
Fillets, Flounder, skinless, 1-lb. pkg.	Boston	lb.	.40	.40	100.1	100.1	98.9	98.9
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.35	.35	102.6	102.6	102.6	98.2
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.33	.34	116.6	117.5	117.5	103.4
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	.93	1.00	109.7	118.6	120.4	122.2
Canned Fishery Products:					102.8	104.1	104.9	120.1
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	24.00	24.00	104.6	104.6	105.7	124.2
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.15	11.25	99.0	99.9	99.9	107.9
Mackerel, jack, Calif., No. 1 tall (15 oz.), 48 cans/cs.	Los Angeles	cs.	5.90	5.90	2/100.0	2/100.0	2/100.0	3/118.5
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.11	8.81	104.0	113.0	116.2	145.1

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/One commodity has been dropped in the fishery products index as of December 1962--"Sardines, Calif., tom. pack, No. 1 oval (15-oz.), 24 cans/cs."--and replaced by--"Mackerel, jack, Calif., No. 1 tall (15-oz.), 48 cans/cs." Under revised procedures by the Bureau of Labor Statistics all new products enter wholesale price indexes at 100.

3/Based on Calif. sardines and not directly comparable with replacement (jack mackerel) for January-July 1963.



THE PLACE of FISH

in diabetic diets
today's menu

breakfast

HADDOCK, FRIED - 1 oz.
Grapefruit - 1/2
Cooked cereal - 1/2 cup w/milk
Toast with butter - 2 slices
Coffee with 1 tablespoon cream

lunch

BOILED SHRIMP - 10 small
Biscuits - 2 - 1" diam.
Broccoli - 1 cup
Cantaloupe - 1/4 - 6" diam.
Buttermilk made with whole milk

dinner

COD FILLETS - 2 oz.
Cornbread - 1" x 1" cube
Carrots, cooked - 1 cup
Butter - 1 tsp.
Applesauce - 1/2 cup
Coffee, black





International

EUROPE

FISHERY PROBLEMS DISCUSSED AT MEETING IN OSTEND, BELGIUM:

Fishing industry and government representatives from the countries of the European Economic Community (EEC) as well as the United Kingdom, Norway, Denmark, Sweden, Portugal, Spain, Switzerland, and Canada attended the European Fishery Day held in Ostend, Belgium, on June 18, 1963. The meeting was organized by EUROPECHE, an association of national organizations of fish producers in the EEC.

At the Ostend meeting, considerable attention was given to the British proposal for a European fisheries conference on access to fishing grounds and markets. (The European Free Trade Association announced general support for the British proposal in a press release of June 13, 1963. The EEC countries are less enthusiastic about the British invitation since they have not yet worked out an EEC common fisheries policy.)

The president of EUROPECHE opened the European Fishery Day meeting with a plea for international cooperation especially between the EEC and EFTA. He noted that the former is an over-all importer of fish and the latter an over-all exporter so that cooperation should take place. He also emphasized the impossibility of an effective EEC or EFTA fishing policy which did not cover both groups.

The director general of the British Trawlers' Federation followed with a provocative talk in which he quoted from an EEC official's speech of May 19, 1962, "I feel we may even go so far as to say that if Britain--and perhaps also Denmark and Norway--do not join the Community, a common fisheries policy must still be evolved for the North Sea and neighboring waters." The British fisheries representative then went on to list some of the common problems of the various national fishing industries such as inadequate prices, overfishing, increased production, and national restrictions. He stated his hope that those problems could be solved in the long run by a West European Fisheries Community. For the immediate future, he expressed hope for progress toward an agreement (by EEC, EFTA, and other European countries at the proposed British fisheries conference) on access to markets and fishing grounds. He said, "The first category (access to markets) includes tariffs, quantitative restrictions, landing bans and bans on the use of harbors as fishing bases, rights of establishments and transshipment, subsidies and the maintenance of the price structure, and market regulations generally. In the second category--access to fishing grounds--are fishery limits to participants and third parties, conservation in its many forms, policing, and enforcement. . . ."

The British representative's talk was followed by a reading of a paper written by an EEC official who is working on an EEC fisheries policy. The EEC official empha-

sized the international aspects of EEC fishing with fleets going farther and farther to fishing grounds. He thought, therefore, that a reorganization of fleets was needed in order to increase their efficiency and number of fishing days. Since territorial fishing rights are another aspect of the problem, he welcomed the British proposal for a conference. His main point, however, was the need for an EEC fishery policy which should be determined as soon as possible and could be done independently of international agreements on fishing rights and market access, though the latter would have to be controlled to avoid state aid from distorting the EEC internal market. He said that the main aims of the EEC fishery policy would be to: (1) increase the productivity of fishing; (2) guarantee an appropriate standard of living to persons employed in the fishing sector; (3) stabilize the market; (4) assure the supply; and (5) see to it that consumption prices are reasonable.

Comments after the talks were limited, but some typical national views came forth. An Italian delegate emphasized the need for an international approach to fishing problems. He also pointed out a lack of representation from Mediterranean countries and a lack of interest in the Mediterranean. A Frenchman emphasized the difference in the aims of EFTA and the EEC since the former is only a free trade association while the latter wants to harmonize fishery policies of all EEC countries. He said that the aim should not be hindered by talks with EFTA until an EEC policy exists.

At the meeting, EUROPECHE also published the following resolutions:

- (1) The need for periodic information before creation of fishery policy.
- (2) The need to make a study of state aid to the fishing industry.
- (3) Labor shortages make the EEC Treaty provisions on free movement of labor especially important.
- (4) A study of social legislation should be commenced as soon as possible and such legislation by EEC countries should be coordinated.
- (5) Coordination of research and conservation policies of the EEC countries should take place.
- (6) National market stabilization plans should be maintained and an effort made to coordinate them.
- (7) According to a timetable, the freedom to establish a fishing venture anywhere in the EEC should be allowed in 1966 or 1967.
- (8) The rights to fish must be common among the EEC countries and no greater benefits can be given third countries. A common policy on territorial fishing rights must be adopted.
- (9) Common efforts to increase consumption should be made.
- (10) Controls of third country imports to the EEC are necessary.
- (11) Tariffs should be put on imports with the level of the tariff depending on the situation within the EEC.

The EEC Statistical Office issued EEC fishing statistics at the meeting for the period 1950-1961. (United

International (Contd.):

States Mission to the European Communities, Brussels, July 10, 1963.)

EUROPEAN FREE TRADE ASSOCIATION

PROPOSED WEST EUROPEAN FISHERIES CONFERENCE ON ACCESS TO FISHING GROUNDS AND MARKETS SUPPORTED:

Senior fishery officials from countries of the European Free Trade Association (EFTA) and permanent EFTA delegates met in Geneva, Switzerland, June 12-13, 1963, for an exchange of views on fishery problems. There was general support for a previous British proposal to hold a West European fisheries conference on access to fishing grounds and markets in London during the fall of 1963. Delegates from the EFTA countries agreed that such problems could best be resolved on a wide European basis. EFTA countries planned further consultations on those questions before the London conference some time in the fall of 1963. (European Regional Fisheries Attache, United States Embassy, Copenhagen, July 10, 1963.)

FISH MEAL

WORLD PRODUCTION, MAY 1963:

World production of fish meal in May 1963 was up 18.1 percent from that in the same month of 1962, according to preliminary data from the International Association of Fish Meal Manufacturers.

Most of the principal countries producing fish meal submit data to the Association monthly (see table).

World Fish Meal Production by Countries, May 1963				
Country	May		Jan.-May	
	1963	1962	1963	1962
..... (Metric Tons)				
Canada	5,020	2,376	31,944	35,808
Denmark	10,267	8,424	35,959	28,229
France	1,100	1,100	5,500	5,500
German Federal Republic	5,795	5,485	133,128	32,264
Netherlands	2/	600	2/	2,200
Spain	1,873	2,578	10,869	11,476
Sweden	754	459	2,783	2,329
United Kingdom	5,752	6,939	32,193	30,861
United States	36,056	188,433	150,479	155,023
Angola	2,276	1,542	11,174	11,885
Iceland	4,602	9,661	34,814	26,930
Norway	10,649	3,822	25,019	19,945
Peru	160,209	121,533	602,850	460,623
South Africa (including South-West Africa)...	33,200	31,945	114,526	134,596
Total	277,353	234,897	991,238	857,669

1/ Revised.

2/ Data not available.

Note: Belgium, Chile, Japan, and Morocco do not report their fish meal production to the International Association of Fish Meal Manufacturers at present.

The increase in fish meal production in May 1963 was due in large part to greater output in Peru which accounted for 57.8 percent of world production during the month. In January-May 1963, Peru accounted for 60.8 percent of total fish meal production.

World fish meal production during the first 5 months of 1963 was 15.6 percent greater than in the same period of the previous year. Production in early 1963 was boosted by record landings of anchoveta in Peru and considerably heavier landings of industrial fish in Iceland, Denmark, and Norway. The increase was partly offset by a noticeable decline in production in South Africa, the United States, and Canada.

FOOD AND AGRICULTURE ORGANIZATION

SEMINAR ON FISHERY DEVELOPMENT HELD IN GHANA:

A seminar on fishery development, planning, and administration was held July 8-13, 1963, at the University of Ghana in Legon. The Food and Agriculture Organization (FAO) of the United Nations sponsored the seminar which was attended by representatives from Ghana, Ethiopia, Basutoland, Liberia, Nigeria, Tanganyika, and Sierra Leone.

The seminar was opened by the President of Ghana who emphasized that African unity was required in economic and social as well as political fields. He called for an effective program for African fisheries "within a central continental framework."

The Ghanaian Minister of Agriculture in his talk to the seminar stressed the importance of the survey and studies being undertaken under the International Cooperative Investigation of the Tropical Atlantic (ICITA). The ICITA investigations include the Guinean Trawling Survey, scheduled to begin in August 1963, which is aimed at investigating the fisheries potential off the West African Coast from Cape Roxo, Portuguese Guinea, to the mouth of the Congo River. (United States Embassy, Accra, July 14, 1963.)

INTERNATIONAL PACIFIC HALIBUT COMMISSION

NORTH PACIFIC HALIBUT FISHING IN AREA 3A ENDED AUGUST 9, 1963:

Fishing in Pacific halibut Area 3A ended at 6 p.m. (P.S.T.) on August 9, 1963. The International Pacific Halibut Commission estimated that by August 9 the catch limit of 34 million pounds for Area 3A would be reached. As of July 23, 1963, halibut landings from Area 3A totaled 26.1 million pounds, compared with 25.7 million pounds by the same date in 1962. The Area 3A closure this year was 2 days earlier than in 1962 when fishing ended on August 11. Area 3A includes the

International (Contd.):

waters off the coast of Alaska between Cape Spencer and Kupreanof Point (near the Shumagin Islands). Fishing in Area 3A is ended until reopened in 1964.

There has been no announcement as to closure of either Area 2 or Area 3B North Triangle which are also subject to catch limits.

The Area 2 halibut quota in 1963 of 28 million pounds is the same as in the previous year. Halibut landings from Area 2 as of July 23, 1963, totaled 18.3 million pounds, compared with 20.2 million pounds by the same date in 1962. In 1962, Area 2 closed on September 8; in 1961, Area 2 closed on September 7; and in 1960, Area 2 closed on July 31. The Area 1 fishing season with no catch limit will end at the same time as that in Area 2.

The new Area 3B North Triangle (enclosing a heavily fished part of the Bering Sea) is subject to a halibut catch limit of 11 million pounds. On July 23, 1963, it was estimated that about 10.4 million pounds of that quota had been caught. The new area and catch limit were established as part of special conservation measures adopted when halibut in the eastern Bering Sea was opened to Japanese long-line fishermen in 1963.

Pacific halibut regulatory areas without catch limit include Area 3B North (that part of the Bering Sea not included within Area 3B North Triangle) and Area 3B South. Both of those areas will close on October 15, 1963.

If not closed by the specified dates or the attainment of catch limits, fishing in all Pacific halibut areas will terminate on November 30, 1963. In 1963, the official opening data for halibut fishing in Areas 1, 2, and 3A was May 9; Area 3B North Triangle and Area 3B North opened on March 25; and Area 3B South opened on April 19.

This year, Area 3A was open to fishing for 92 days--2 days less than the 94-day season in 1962. In 1961, the area was open to fishing for 105 days, in 1960 for 85 days, in 1959 for 92 days, and in 1958 for 119 days. Between 1945 and 1955, the trend had been towards a shorter fishing season in Area 3A, but then the trend changed and through 1957 the seasons were longer. Beginning in 1958, the trend was reversed again and, with some

exceptions, recent seasons have tended to become shorter.

Note: See Commercial Fisheries Review, August 1963 p. 70 and March 1963 p. 41.

INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

MEETS AT WASHINGTON, D. C.:

The Fraser River salmon program was discussed with the State Department and Congressional officials at a meeting of the International Pacific Salmon Fisheries Commission in Washington, D. C., on May 8, 1963. The day following the Washington meeting, the group flew to Ottawa for similar discussions with members of the Canadian Parliament and Canadian fisheries officials.

A reorganization of the research program of the Commission is under way to meet the conservation problems arising from rapid industrialization of the Fraser River Basin, according to the chairman of the Commission. The Fraser River salmon program is supported on an equal basis by the United States and Canadian Governments. The salmon catch, as near as possible, is also divided on an equal basis.

Note: See Commercial Fisheries Review, August 1963 p. 76.



Argentina

FISHING INDUSTRY

PLANS MODERNIZATION:

In late June 1963, a fishing cooperative in Mar del Plata, Argentina, was preparing to purchase two fully equipped 62-foot purse-seine vessels as the first step in a modernization program. An Argentine bank was to provide a loan of 15 million pesos to finance the major portion of the cost (estimated at 22 million pesos or approximately US\$170,000) of the two vessels.

According to the manager of the fishing cooperative, the two purse-seiners would be purchased in the United States or West Germany and used as training vessels. After modifications were made to suit local needs and conditions, the two vessels would serve as models for 100 additional craft to be constructed in Argentina. There are no firm plans to finance the additional vessels.

The large-scale vessel-building project, which is still in the early stages of planning,

Argentina (Contd.):

is part of an Argentine Government plan to obtain 25-30 million dollars in financing to modernize the fishing fleet, and install a fish-meal plant, fish-processing plants, refrigerated storage, and transportation facilities. The Government may submit a request to the Inter-American Development Bank to finance the project. Argentine Government officials have also indicated they are considering a request to the United States Agency for International Development (AID) for assistance in financing the fisheries plan. (United States Embassy, Buenos Aires, June 29, 1963.)

**Australia****BLUEFIN TUNA SURVEY RESUMED:**

The tuna vessel Estelle Star was chartered for tuna investigations off Albany, Western Australia, in June 1963 by Australia's Commonwealth Scientific and Industrial Research Organization's (CSIRO) division of Fisheries and Oceanography.

The program is designed as a follow-up of the scientific work done by Estelle Star in that area during the Commonwealth survey of tuna resources (August 1961-July 1962) and includes:

1. A check on the age groups of southern bluefin tuna found off Albany at that time of year.
2. Blood sampling.
3. Further tagging (17 southern bluefin tagged off Albany have been recovered near Port Lincoln).
4. Comparative tagging tests designed to show whether there is any difference in the rate of recovery of tuna tagged in the normal way and tuna which are also injected with terramycin.
5. Comparative tagging tests using red tags and yellow tags to see which color is more likely to be noticed by fishermen. (Australian Fisheries Newsletter, July 1963.)

Note: See Commercial Fisheries Review, April 1963 p. 39 and March 1963 p. 45.

**SHRIMP FISHERY IN SHARK BAY
BEING EXPANDED:**

Shrimp fishing on new grounds north of Shark Bay (Australia), which are reported to be extensive, is planned by a fishing firm in Fremantle. Operations will start as soon as the firm activates a 125-foot supply and research vessel it recently purchased. She will be able to supply freezer-catcher boats, which will then be capable of operating north from Shark Bay.

The vessel (renamed Kwinana Empress) is capable of carrying 200 tons of fuel, 35 tons of refrigerated cargo, and 10 tons of deck cargo. The managing director of the firm stated the vessel was worth £100,000 (US\$240,000) and was expected to go into operation in August.

The Fremantle firm already has a freezer-catcher vessel fishing for shrimp in Shark Bay waters. Five other vessels of the same type were being outfitted at Fremantle for shrimp fishing.

The Kwinana Empress will be the largest of 70 boats operated by the company between Fremantle and Shark Bay in fishing, and crayfish and shrimp fishing. (Australian Fisheries Newsletter, July 1963.)

Note: See Commercial Fisheries Review, April 1963 p. 40.

**Brazil****FOREIGN TRADE IN
FISHERY PRODUCTS, 1961-1962:**

Brazil's exports of fishery products in 1962 consisted mainly of 2,069 metric tons of frozen spiny lobsters valued at US\$4,039,000 as compared with shipments in 1961 of 1,741 tons valued at \$2,862,000.

Brazil's imports of fishery products in 1962 consisted mainly of 26,952 tons of salted cod valued at \$14,923,000 as compared with imports in 1961 of 25,714 tons valued at \$15,829,000. (United States Embassy, Rio de Janeiro, July 15, 1963.)



Canada

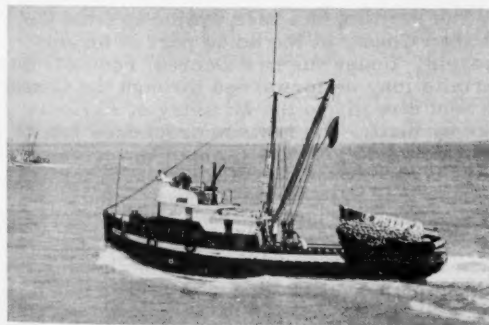
BRITISH COLUMBIA FISHING INDUSTRY TIED-UP BY LABOR DISPUTE:

On July 29, 1963, the 70-million-dollar British Columbia fishing industry had moved into the third week of a labor dispute which had halted production and idled over 10,000 workers. About 6,000 salmon fishermen and an unknown number of groundfish and halibut fishermen were tied-up.



About 81 percent of British Columbia's salmon fishermen voted for the tie-up in a union-supervised poll. Shore workers favored the work-stoppage by a 54 percent majority in a Government-supervised vote. British Columbia tendermen rejected the walk-out by two votes in a Government-supervised vote. The salmon fishermen asked for higher ex-vessel prices while the shore workers sought higher wages.

When work was halted on July 15, 1963, union-company talks had been stalemated for six weeks. Although an important run of sockeye salmon was expected in late July 1963, industry officials did not expect an early settlement.



A British Columbia purse-seiner sailing out to seek the schools of salmon.

Canadian vessels willing to fish were unable to land their catches in British Columbia. Some British Columbia fishermen investigated the possibility of landing their catches at United States ports.

United States independent commercial salmon troller fishermen of Washington and Oregon were inactive for a short period in late July, but they returned to fishing after some adjustments were made in ex-vessel troll salmon prices. (United States Consulate, Vancouver, July 15, 1963, and newspaper reports.)

BRITISH COLUMBIA FISHING INDUSTRY TIE-UP ENDS:

The British Columbia fishing industry tie-up ended August 4, 1963. A recommendation that British Columbia fishermen submit their ex-vessel price dispute to arbitration and return to work immediately was made by the Canadian Government after the Federal Minister of Fisheries and the Minister of Labor for British Columbia met in Vancouver, B.C., on July 29, 1963, to consider the crisis in the British Columbia fishing industry. It was pointed out that unless fishing was resumed at once, some salmon runs would be missed completely. A failure to harvest can result in overseeding of spawning grounds. This can be as damaging as overfishing.

Anticipating the end of the tie-up, the International Pacific Salmon Fisheries Commission met on August 2, 1963, and recommended to the Canadian Government that fishing for sockeye and pink salmon in the Canadian Convention waters lying easterly of the William Head-Angeles Point line start 6:00 p.m., August 4, and continue until 8:00 a.m., August 8. The Commission was to meet again on August 6 to examine further the situation involved in the Fraser River sockeye fishery.

British Columbia fishermen returning to fishing grounds found that the industry-wide tie-up permitted the bulk of the Fraser River salmon run to slip past. An official of the International Pacific Salmon Fisheries Commission said the returning fishermen "just got in on the tail end of the run."

The Canadian Federal Government and the British Columbia Provincial Government agreed to appoint a committee consisting of 3

Canada (Contd.):

representatives of the Federal Government and 3 representatives of the Provincial Government to examine in detail the problems associated with price and wage disputes in the British Columbia fishing industry. The committee would recommend actions necessary to minimize interruptions of fishing operations in the future.

NEW METHOD TESTED FOR UNLOADING SALMON FROM VESSEL:

A new method of unloading salmon so fast that conventional handling at the cannery can't keep up with the pace has undergone successful trials in British Columbia. The Vancouver technological station of the Fisheries Research Board of Canada worked in collaboration with a Vancouver fishing company in developing the new system which is described as "pneumatic unloading." The system involves the use of air pressure to force fish out of specially constructed tanks and onto the dock. This it does at remarkable speed. Installation of the system on the salmon packer vessel Derek Todd, the only vessel equipped for pneumatic unloading, also incorporates the use of a mechanically operated refrigerated sea-water unit. The vessel has four tanks with a total capacity of 129,000 pounds.

The future operations of the "pneumatic unloader" will be observed with interest by Canada's fishing industry. (Trade News, July 1963.)

EXPERIMENTAL OYSTER HATCHERY BEING BUILT:

Canada's first experimental oyster hatchery is to be built this summer at the Oyster Culture Station of the Federal Department of Fisheries at Ellerslie, P.E.I., the Canadian Fisheries Minister announced on July 23, 1963. The purpose of the project is to further develop and stabilize the oyster fishery of the Maritime Provinces.

A contract for the construction of the hatchery and a stand-by generator house was awarded in July. Construction is to be according to specifications prepared by fisheries biologists and engineers.

The new hatchery is intended to provide oyster seed-stock to Maritime oyster farmers in sufficient quantities to ensure a continuing harvest. Of late years, oyster spat

has not been available from its natural habitat, and experience has shown that no reliable prediction of the wild supply can be made in time to avoid waste effort. The uncertainty of supply of spat for seeding purposes should be relieved if the oyster hatchery is as successful as expected.

Costing approximately \$38,000, the new hatchery includes a controlled sea-water system to provide an environment as close as possible to nature for the successful rearing of oyster spat. The buildings are to be annexed to those already at the Ellerslie Oyster Culture Station which is jointly administered by the Department of Fisheries and its scientific agency the Fisheries Research Board of Canada.

The head of the oyster investigation work of the Research Board's Biological Station at St. Andrews, N. B., will have general direction of the new hatchery operation. It is expected that the work will be completed before the end of October 1963.



Chile

CONTROL OVER FOREIGN FISHING VESSEL LICENSES TIGHTENED BY NEW DECREE:

Chilean Decree No. 332 designating the Chilean Ministry of Agriculture as the sole authorizing agency for foreign fishing vessel permits was published in "Diario Oficial" on June 27, 1963, and became effective as of that date.

The permits had been available from the Chilean Consul at the home port of foreign vessels. Under the new Decree, requests for permits may be forwarded through the Consul or sent directly to the Ministry of Agriculture by mail. The revised procedure was established to give the Chilean Government more control over permits issued to foreign vessels (not working for national plants) to operate within Chile's declared 200-mile fishing limits. An official of the Chilean Government has stated that the use of motherhips within the 200-mile zone will be prohibited.

Chile expects a substantial increase in its tuna fleet and feels that there must be more effective protection of its marine resources. In mid-1963, a tuna cannery and freezing plant

Chile (Contd.):

was being established at the port of Iquique by the Corporacion de Fomento de la Produccion de Chile (CORFO). The project received a \$5 million loan from the Inter-American Development Bank which included funds for the purchase of 18 vessels. By July 1963, part of the equipment for the canning and freezing plants had arrived at Iquique, and one Chilean vessel has started fishing for tuna. Several other fish meal plants in northern Chile were considering the feasibility of processing fresh fish--primarily tuna and bonito. (United States Embassy, Santiago, July 15, 1963.)

FISHERIES TRENDS, APRIL-JUNE 1963:

The fish-meal industry of northern Chile has experienced a spectacular growth under the Fisheries Law of March 31, 1960 (Decree Law No. 266) which authorized special concessions and exemptions for individuals or companies engaged in any phase of the fishing industry. In the Province of Tarapaca, the 12 plants in operation in mid-1963 had a combined production capacity using 280 metric tons of fish per hour. Within a year that capacity should be more than doubled by the completion of expansion plans and new plants under construction.

Chilean fish-meal companies are increasing their fishing fleets both in number and size of vessels. Several new boatyards opened in Chile in 1963 to help satisfy the demand for fishing vessels. Plants and fishing captains now favor 120-150 ton vessels over the 100-110 ton vessels popular in 1962. The Corporacion de Fomento de la Produccion de Chile (CORFO) has provided substantial financing for both fish processing plant installations and vessel purchases.

CORFO and the Chilean fishing industry have also undertaken an extensive program designed to increase national consumption of fish and shellfish. The present annual per capita consumption is estimated at 9 kilograms (19.8 pounds) of fish and 5.3 kilograms (11.7 pounds) of shellfish, but those figures are weighted by the high consumption of the coastal population. The sponsors believe that a potentially large market exists in the interior population centers if a quality product is produced. The promotion program envisions marketing terminals, refrigerated storage, and transportation facilities on a country-

wide basis. (United States Embassy, Santiago, July 25, 1963.)

JAPAN-UNITED STATES-CHILE JOINT FISH-MEAL OPERATION:

The president of a large Japanese fishing company was scheduled to return to Japan on July 18, 1963, after spending over six weeks (since late May) in Chile negotiating the establishment of a joint fish-meal enterprise in that country. According to press reports, the participants to the proposed joint enterprise, which include a large United States tuna packer and Chilean interests, have reached agreement on the major issues involving the establishment and operation of the joint enterprise, although details have yet to be worked out.

The joint fish-meal venture in Chile involves the operation of the Japanese fish-meal factoryship Renshin Maru (14,094 gross



Japanese fish-meal factoryship Renshin Maru. (Smaller vessel alongside is a Japanese oiler vessel.)

tons) which would be anchored offshore to receive fish for processing. (Suisan Tsushin, July 17, 1963, and other sources.)

DEMAND FOR SHRIMP AND LANGOSTINO CAN'T BE MET:

For lack of processing plants, Chile can't keep up with the demand for her frozen shrimp and langostino. Last year exporters were able to fill only a third of the orders received. They shipped some 1,100 metric tons (worth US\$1.7 million) to the United States and Europe, barely scratching the surface of the world market, according to a June 1963 report from Chile.

Chile (Contd.):

The frozen shrimp and langostino industry (plate lobster) is less than a decade old in Chile, and is now confined to the central part of that 2,600-mile coastline. The major ports are Coquimbo, Quintero, Valparaíso, and San Antonio, where the climate permits year-round fishing. Virtually untapped are the vast shellfish resources of the southerly waters of the Gulf of Arauco, Chiloe, and the Straits.

Like most countries, Chile wants to step up exports, and for several years has had legislation providing tax and other special incentives to fishing and export industries. In order to increase plant capacity and promote new foreign and domestic investments, the Chilean Development Corporation (CORFO), the Government agency in charge of bettering the national economy, offers direct and indirect aid to the fishing industry. For instance, CORFO will build industrial sites in many ports, to provide the installations and auxiliary services required for high-yield operations. That Agency has already done this in some northern ports, with a resulting boom in cannery and fish-meal production. CORFO grants credits and loan guarantees to foreign and domestic investors interested in new or joint ventures to establish or expand plants and fleets. It is also in a position to offer investors technical assistance and general information on resources and markets. Over the years (CORFO was founded in 1939), its own studies and those undertaken with foreign experts have been complemented by practical experience in various phases of the fishing industry.

CORFO, which has offices in New York, is hopeful that these incentives will generate more industrial know-how and investments from abroad, so that Chile will no longer have to turn down sales.

The "plate lobster" or langostino consists of two species: *Munida gregaris* and *Gulothus monodon*. The Chilean shrimp species is *Phynchocinetes typus*.

Note: See *Commercial Fisheries Review*, March 1961 p. 49.



Denmark

FISHERY EXPORTS TO UNITED STATES
DECLINE IN JANUARY-JUNE 1963:

Preliminary data on Denmark's 1963 fishery exports to all countries during January-June 1963, indicate a 16-percent increase in quantity and a 9-percent increase in value as compared with the record exports in the first half of 1962. Danish exports to the United States, however, dropped 15 percent in quantity and 13 percent in value. Exports of pond trout, and cod and flatfish fillets were higher but canned herring and frozen lobsters dropped sharply. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, July 17, 1963.)

FISHERY PRODUCTS EXPORTS AND
FISHING INDUSTRY TRENDS:

A review of Denmark's role in the export of fishery products to outside markets was given in a leading article in the July 19, 1963, issue of Denmark's *Udenrigs-Ministeriets Tidsskrift* (The Foreign Ministry's Weekly), titled "Danish Fish Exports and Its Organization," by the Department Chief of Denmark's Ministry of Fisheries. The article stated that the earliest period in which Danish-caught fish played a role in European markets was in the 12th century when herring was first exported to Northwest Europe, especially the Hanseatic States (a medieval association of merchants in various free German cities which traded abroad).

Denmark's big surge in fishery products exports came after World War II (table 1).

Table 1 - Danish Fishery Products Exports, 1930-62

Year	Quantity	Value	
	Metric Tons	1,000 Kroner	US\$1,000
1962	320,000	595,000	86,275
1960	221,000	408,000	59,160
1950	123,000	172,000	24,940
1940	92,000	60,000	8,700
1930	61,000	34,000	4,930

Note: Does not include exports from Faroe Islands.

The following reasons are given for Denmark's large increase in fishery products exports:

1. **Location:** Denmark has a favorable location with regard to export markets and to fishing grounds populated with a number of different varieties of fish. This is important to marketing, and to establishment of a certain "rhythm" in the fisheries whereby fishermen can fish the year-round without long periods of idleness.

With regard to its best customers, Denmark has a land boundary and land transport to West Germany, ferry connections and short water transport to West Germany, Sweden, and the United Kingdom, and some direct fishing vessel landings in ports of those coun-

Denmark (Contd.):

tries. There are favorable rates for plane transportation of fresh fish to Italy because of return loads of flowers to Scandinavian countries.

Denmark's fishery landings consist of about 50 species of some importance of which plaice, herring, and cod account for about 60 percent of the total value (table 2).

Table 2 - Leading Species--Importance of Relationship of the Value of Each to Total Value, 1961

Leading Species	Percent of Total Value
Plaice	24.0
Herring	20.6
Cod	15.0
Other soles and flounders	7.2
Eels	7.0
Industrial fish (sand eels, Norway pout, etc.)	6.5
Salmon	5.0
Whiting	3.0
Deep-water shrimp	2.4
Norway lobster	1.8
Other	7.5
Total	100.0

When there are significant changes in market demand or prices, Danish fishing vessels are able to shift from catching food fish to catching industrial fish, and vice versa, without costly changes in equipment or grounds fished. It has been estimated that 35 to 40 percent of the Danish catch is taken within territorial waters, of which 10 percent is caught by fixed gear. Thus, Danish vessels compete with foreign vessels for 70 to 75 percent of the catch they make.

2. **Fishing Fleet:** There has been continual modernization of the cutter fleet and the use of modern technical accessories and gear. The Danish fisheries are among the few in Europe using cutter fleets exclusively.

Unlike most other important European fishing countries, Denmark offers no subsidies or similar financial support to its fishing vessels. Since most other countries have fishing fleets with large vessels, often including stern trawlers and factoryships which fish distant grounds, it seems obvious that an important reason for the lack of subsidies in Denmark is the relatively small size of the cutters and the fact that they fish only in nearby waters and in the North Sea. In 1961, the largest vessel measured only 183 gross tons. Of the 8,347 motorized vessels, slightly less than half (4,045) are over five gross tons (table 3).

Table 3 - Denmark's Motorized Fishing Fleet Grouped by Gross Tonnage

Gross Tons	Number of Vessels
Over 100	57
50 to 100	106
15 to 50	1,770
5 to 15	2,112
Under 5	4,302
Total	8,347

3. **Quality of Fish:** The quality of the fish is high resulting from the short distance to the fishing grounds and a very comprehensive quality control. The quality of Danish food fish is excellent because trips are short,

the fish are carefully handled, and there is a control and inspection system which functions from landings through processing and exports. Most Danish export products generally are recognized as of high quality. The fishery exports have helped to develop this recognition and the fishing industry seeks to maintain it as a selling point. For example, fresh cod fillets shipped to Switzerland are cut only from cod landed alive at the filleting plant. About 13 percent of Denmark's pond trout exports in 1962 were shipped alive. At the Copenhagen wholesale fish market, there is an absence of fish odors. A request by filleting plants to freeze surplus plaice supplies for thawing, filleting, and refreezing (after not more than a month's storage) was denied by the Fisheries Ministry because laboratory tests, not yet completed, indicated such a product would be equal only to fillets processed in the usual manner after two months of storage.

4. **Improved Products:** Despite the important exports of fresh fish, there has been an increasing trend toward improvement and refinement of fishery products. Cod and flatfish, for example, are filleted in increasing quantities while filleted herring has had an explosive development. The newest filleting machines are in wide use, but hand-filleted fish are available for the customer who demands them. Fillet waste is sold to local animal farms and trout farms for food. Some producers maintain that, because of the very strong competition in the fish-filleting industry, the waste provides the only profit. In addition to producing single fillets and blocks of fillets, some producers are manufacturing fish sticks, fish portions, etc., which are breaded and sometimes partially cooked. Denmark must compete with many countries in the production of cod fillets, but it has been the leader for years with respect to plaice. Developments in freezing techniques have nullified, to some degree, Denmark's geographical advantages in fresh fish production and marketing, but it is difficult to judge if the wider markets created by frozen fish balance the new and greater competition from producers who were unable to compete with Danish fresh fish.

Table 4 shows increased values for all major categories of fishery products exports in 1962 as compared with 1960 and 1961. The trend toward a greater proportion of fillets in the "fresh" and "frozen" categories is marked.

Fish-Canning Industry: The fish-canning industry began long before the World War II, but many canners have taken up new products and rationalized their operations with modern equipment. The most important products are packed from herring, brisling, mackerel, and shrimp. Fish specialties successfully introduced on the world market include caviar from lumpsucker roe, cod roe, and smoked cod liver.

Meal and Oil: An important fish meal and oil industry was built up after World War II, utilizing herring, sand eels, whiting, and Norway pout. It reached an export peak in 1959 but barely survived after that year because of very strong competition from Peru. Denmark's fish-meal industry now operates in a more stable market with high-quality Danish fish meal being exported in substantial quantities.

Danish herring meal is highly regarded in the British market and brings a premium price over Peruvian fish meal.

Pond Trout: About 650 Danish trout farms, with an annual production of about 18 million pounds, export

Denmark (Contd.):

Table 4 - Denmark's Fishery Products Exports, 1960-62 and Change from 1960

Product	1962		1961		1960		Change from 1960 to 1962
	Million Kroner	US\$1,000	Million Kroner	US\$1,000	Million Kroner	US\$1,000	%
Fresh Fish:							
Fillets	53.3	7,728	22.6	3,277	15.9	2,305	+235
Other	258.7	37,512	229.5	33,277	200.4	29,058	+ 29
Total	312.0	45,240	252.1	36,554	216.3	31,363	+ 44
Frozen Fish:							
Fillets	92.0	13,340	82.8	12,006	64.5	9,353	+ 43
Other	40.5	5,872	39.4	5,713	32.1	4,654	+ 26
Total	132.5	19,212	122.2	17,719	96.6	14,007	+ 37
Other Products:							
Salted fish	21.1	3,047	17.3	2,509	16.7	2,422	+ 26
Smoked fish	5.9	855	4.6	667	3.7	537	+ 59
Canned fish	38.2	5,539	29.4	4,263	26.1	3,784	+ 46
Semipreserved	8.4	1,218	5.1	739	3.7	536	+127
Fish meal, etc.	66.3	9,613	37.3	5,409	30.8	4,466	+115
Fish oil	10.7	1,551	8.5	1,232	6.2	899	+ 73
Grand total	595.0	86,275	476.5	69,092	400.1	58,014	+ 49

practically all the fish as live, iced, or frozen trout. The exports are largely the result of a tremendous postwar development.

Danish pond trout are raised for export at a very low cost because of: (a) good water supplies, (b) the use of inexpensive earthen pond construction, (c) the availability of large quantities of fresh fish for food only a short distance from the trout farms, and (d) a resulting high trout production per worker. More than 95 percent of the pond trout production was exported in 1962.

Other Products: In addition to the products mentioned, most of which appeared after the war or became significant then, there are such important export items as fresh and frozen salmon, eels, lobster, and shrimp.

Importing Countries: The largest importers of Danish fishery products are European countries, but the United States ranked third in 1962 as shown in table 5.

Table 5 - Principal Importing Countries of Danish Fishery Products, 1962

Country	Million Kroner	US\$Million
West Germany	156	22.6
United Kingdom	106	15.4
United States	52	7.5
Sweden	48	7.0
Italy	32	4.6
Benelux	32	4.6
Switzerland	29	4.2
France	21	3.0

Denmark's exports to various markets differ greatly, and generally supplement each other. West Germany imports mostly herring and eels with lesser quantities of plaice, fish meal, and some trout. The United Kingdom takes plaice and other flatfish, cod, trout, canned fish, and fish meal. Thus, the purchases of the two largest importers are largely different. Imports to the United States are mainly cod blocks, trout, lobster tails, and canned fish. Sweden takes numerous products--the most important are plaice, cod, trout, salmon, and smoked and canned fish. Italy, despite its distance, imports large quantities of fresh

salt-water fish and is the largest importer of trout. Exports to the Benelux (Belgium-Netherlands-Luxembourg) countries are hampered by quotas but include mostly salt-water fish, eels and trout. Denmark is the largest exporter of fishery products to Switzerland, mostly salt-water fish and trout. France takes fresh salt-water fish, salmon and canned fish. Some products like trout, are hindered by quotas from supplying a probable larger French market. The Soviet Union takes only salted herring from the Faroe Islands. Other East Bloc countries import fresh and frozen herring, canned mackerel, cod fillets, and fish meal.

Exports to the United States were down 15 percent in quantity and 14 percent in value in the first six months of 1963. Danish canned sardines could not maintain the foothold gained in United States food stores when the Maine sardine pack was about one-third normal in 1961. Frozen lobster tail imports also declined drastically. Danish fishery exports go to over 110 countries in about 50 significant categories. New record export totals set in 1961 were exceeded in 1962 and the first half of 1963 is 16 percent ahead of 1962 in quantity and 9 percent in value. As a result of the Danish Fisheries Minister's recent trip to the U.S.S.R., an attempt will be made to sell frozen herring fillets, canned fish, and fish meal to the Soviet Union.

Number of Associations Aid Exporters: Most of the Danish fishery products exporters are members of fishery organizations. A number of them belong to several. Danish fish exporters generally belong to the following organizations:

Denmark's Fish Trade and Marine Fisheries Association;

The Association for Denmark's Fish-Canning Industry;

The Association for Denmark's Fish-meal and Fish-Oil Industry;

Danish Fish Fillet Factories Export Association;

Danish Export Association for Export of Flatfish Fillets; and

Union of Danish Trout Exporters.

There are also several smaller groups, for example, exporters of salt fish.

Denmark (Contd.):

The associations care for the interests of the exporters, including those involving the Government. In no instance do their duties include management of exports. Only to a minor degree have the associations sought to develop a cooperative effort with regard to exports. In the broad view, those efforts have had no lasting effect.

The several associations are represented in the Fishery Council. With respect to exports, the Council supplies information for the member organizations and manages fishery participation in various exhibitions. The Fisheries Ministry supports exports by maintaining attaches in London and Bern, and formerly, in New York. Exporters and fishermen are represented on the Ministry's Export Committee where all important export questions are discussed.

One consequence of the lack of organization is that individual exporters export in sharp competition with each other. That type of exporting has important advantages and, without doubt, has been of great benefit to Danish fishery exports up to now. In many instances, the personal trust built up between the exporter and importer has been of great importance, just as the stiff competition has contributed to a high quality and expansion of exports. The contention in regard to lack of organization is not without an exception, however, for the local cooperatives, which sell 20 percent of the Danish fish, are joined together in a central export organization, "Dansk Andelsfisk" (Danish Fish Cooperatives). Some filleting companies also belong to "A/S Dansk Dybfrost" (Danish Deepfrost).

Danish exporters of fishery products have not received any financial aid from the Government since December 31, 1961, when the approximately four-percent premium for sales to the dollar areas lapsed. Participation in the more important European food fairs, usually including the sale of fried plaice portions, has been reported as successful.

As a greater concentration of the wholesale fishery trade, and therefore, the import business, takes place in the importing countries, it becomes a question whether a greater concentration of the larger export activities, than heretofore, is also desirable in Denmark. The concentration mentioned joins, for example, the sale of frozen fillets with investments in the cold chain and means of transportation, and the supplying of freezer cabinets to retail stores. Also, in Denmark, the increasing industrialization of the wholesale link requires greater and greater capital investments which lead to some danger that the present operations, in the future, may have difficulty in meeting competition with strongly capitalized concerns, if they wish to preserve their independence. The great demand for investment in business makes it difficult for many to obtain the necessary funds to finance purchases and storage. Export credit arrangements, in this connection, undoubtedly have been of great help, especially to fishery exporters.

Some European fishery experts, for example, the head of the Department of Fisheries, Federal Ministry for Food, Agriculture, and Forestry, West Germany, believe strongly that fisheries activities should be vertically integrated from catching through marketing. An example of this type is the joining of a Scandinavian processor and marketer of food products, including fish, with an internationally known firm based in Swit-

zerland. Vertical integration is one of a number of allied topics on the agenda for a Food and Agriculture Organization (FAO) meeting on Business Decisions in Fishery Industries which is being planned for the late summer or early fall of 1964 in Europe. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, July 31, 1963.)

* * * * *

FISHERMEN'S MINIMUM PRICE PROGRAM FOR PLAICE WITHDRAWN:

The Danish fishermen's minimum price program for plaice was started in June 1963 after months of discussion, but it had to be cancelled early in July because of heavy landings of small plaice. Other contributing factors to cancellation of the program were: (1) the vacation period in filleting plants, (2) auction prices well below the minimum of 1.05 kroner per kilo (6.92 U.S. cents a pound) agreed to early in 1963, and (3) sales by fishermen at some Danish ports at prices below that level despite the program restrictions. Also, the reserve established by a levy of 0.02 kroner per kilo (0.13 cents a pound) was practically exhausted.



Danish fisherman standing on a typical live box or float in which live plaice are held for marketing. Fish shops throughout Denmark carry live plaice.

While the minimum price program was in effect, substantial plaice landings at Esbjerg, which did not reach the minimum price, were diverted from human consumption. These were sold for industrial use or mink food at prices as low as 0.30 kroner per kilo (2 cents a pound). Fishermen were reimbursed for the difference in the price they received and 0.70 kroner per kilo (4.6 cents a pound). Accompanying the collapse of the program were the following developments:

1. With the benefit of the experience gained in their unsuccessful effort, the fishermen's associations are working on a new minimum price program for plaice. It is reported that a new program will not be instituted until a larger reserve has been accumulated to reimburse fishermen for sales below the minimum level. Fishermen will be bound more rigidly to observe the pool regulations,

Denmark (Contd.)

and efforts may be made to curtail landings when filleting plants are unable to handle large supplies due to the vacation season.

2. At the request of the Association, the Fisheries Ministry increased the minimum size limit for plaice from 265 to 270 millimeters (10.43 to 10.63 inches) for the period of heavy landings from July 1 to September 1.

3. Fish exporters, some of whom deliberately limited their bids to 1.04 kroner (6.84 cents a pound) were denied their request to freeze small plaice and to thaw and fillet them within one month, as a means of relieving the situation.

In refusing the exporters' request to freeze small plaice, the Fisheries Ministry stated that the Ministry's Technological Research Laboratory had not yet completed its experiments on freezing and later thawing and processing plaice, but that the tests already conducted definitely demonstrated a decrease in quality. The deterioration in quality corresponds to that in a normal frozen fish fillet which has been in storage for about two months. (Regional Fisheries Attache for Europe, U. S. Embassy, Copenhagen, July 17, 1963.)

Note: See *Commercial Fisheries Review*, April 1963 p. 48, January 1963 p. 86.

FISHERIES ASSOCIATION MAKES RECOMMENDATIONS:

The Dansk Fiskeriforening (Danish Fisheries Association), an organization composed of 155 local associations with a total membership of 9,508 members, met in Copenhagen in early July 1963 to review developments in the 1962/63 fiscal year.

Recommendations made at the meeting were:

1. An agreement should be negotiated for voluntary group life insurance for active fishermen between the ages of 20 and 67 to take effect October 1, 1963.

2. A final disposition of the proposal to increase the size limit of plaice to 270 millimeters (10.63 inches) should be undertaken with the West Jutland Fisheries Association. (The West Jutland Fisheries Association is the second of the only two large Danish associations. It includes 19 associations with about 4,000 members who fish mostly in the North Sea. The Fisheries Minister agreed to act promptly on a joint request from the associations and has already placed the 270-millimeter limit in effect.)

3. Proposals for a new pool arrangement to insure a new minimum price program for plaice should be sent promptly to the local associations. (The Fisheries Minister stated

he did not have authority to institute the continued payment of 0.02 kroner per kilo, or 0.13 U.S. cents a pound, of plaice landed to a minimum price pool.)

4. The lower limit should be 15 gross tons instead of 20 for fishing vessels required to carry rubber life rafts. It was believed possible to obtain rafts which would meet inspection requirements for US\$260-275. Inshore boats might obtain smaller ones for \$100-115. (Rubber life rafts have been effective in several instances in saving Danish fishermen from their sinking vessels.) (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, July 17, 1963.)

FISHERY PRODUCTS SALE TO THE SOVIET UNION DISCUSSED:

The sale of Danish fishery products to the Soviet Union and the possibility of further Soviet purchases of fishing vessels built in Denmark were subjects discussed during a visit to the U.S.S.R. in June 1963 by the Danish Fisheries Minister. The Fisheries Minister was accompanied by two officials of the Danish Department of Fisheries.

According to Danish newspaper reports, the Soviet Fisheries Minister was invited to visit Denmark to continue the conversations carried on in Moscow.

HERRING SHARK FISHERY:

The year's first Danish catch of herring sharks or porbeagles (*Lamna cornubica*) was landed by a Skagen cutter in mid-July 1963. The 95 sharks weighed 5,500 pounds and were bid in at the auction hall for 25.7 cents a pound, mainly for shipment to Italy. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, August 7, 1963.)



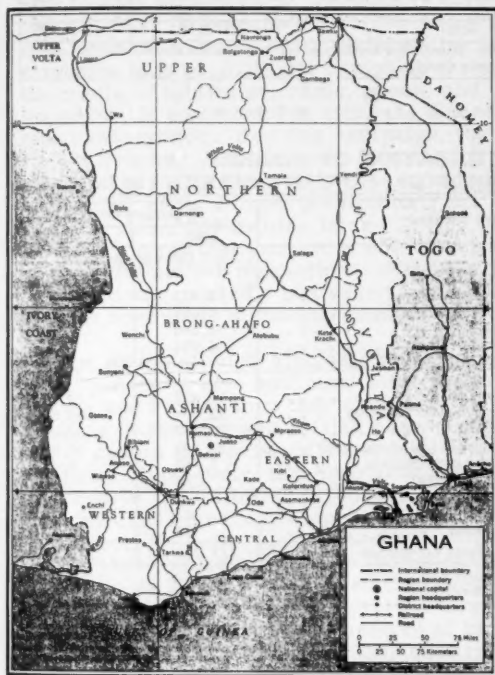
Ghana

FISHERIES EXPANSION PROGRAM:

Fishing Vessels: Ten years ago, Ghana's fishing industry was dependent on some 6,700 traditional canoe fishermen whose annual landings totaled about 20,000 metric tons. Mechanization programs raised landings to about 40,000 tons by 1962. The Government of Ghana is pressing a development plan to increase landings to 150,000 tons by 1966-67.

Ghana (Contd.):

An agreement was signed on July 9, 1963, by the Government of Ghana and a shipyard in Oslo, Norway, providing for the construction and delivery to Ghana of 6 sterntrawlers. Each vessel will have a refrigerated cargo space of approximately 35,000 cubic feet, capable of holding 450 to 500 tons of fish per trip. The first vessel is scheduled to arrive in Ghana by July 1964, and all 6 are to be delivered within 2 years. The Norwegian firm will supply key officers for the fleet of 6 trawlers and arrange for the training of Ghanaian crews.



The signing of the Norwegian contract means that Ghana has completed arrangements for the purchase of 18 stern trawlers (6 from Norway, 2 from the United Kingdom and 10 from Japan). Ghana has also ordered 8 side trawlers and 10 purse seiners from the Soviet Union. The new vessels will be operated by the Government-owned Ghana Fishing Corporation.

Information on privately-owned vessels was provided during a question period in the

Ghanaian National Assembly on June 18, 1963, as follows:

One Ghanaian fisheries firm owns 8 fishing vessels; another owns 7 fishing vessels and has 1 foreign vessel under charter; and a third Ghanaian firm owns 1 fishing vessel and has 4 foreign vessels under charter.

In an announcement in the local press, an official of one of Ghana's privately-owned fishery firms stated that his company would charter 10 Polish fishing vessels in order to increase the company's annual fish catch from 16,000 to 36,000 tons. The contract for the charter was to be signed in Poland during July 1963.

Distribution and Marketing: The development of domestic and export markets for fishery products is an important objective of the Ghana Fishing Corporation. It has been authorized to build plants for freezing, storing, canning (for sardines and other fish), and processing fish. In the past, Soviet, Japanese and Polish vessels have supplied the Corporation with fish. In the 9-month period ending June 30, 1963, the Corporation distributed about 15,000 tons of fresh and frozen fish through its wholesale and retail outlets.

In a statement to the Ghanaian National Assembly on July 3, 1963, the Minister of Agriculture said that the Ghana Fishing Corporation maintains 1 refrigerated truck, 3 insulated vans, and 8 open trucks to deliver fish. The Corporation plans to acquire 18 more transport vehicles by June 1964.

With increasing production, the Ghana Fishing Corporation plans to expand greatly its distribution and cold-storage facilities.

The Minister of Agriculture said that cold-storage warehouses are now located at Tema, Kumasi, Takoradi, Cape Coast, Accra, Ho, Nsawam, Obuasi, and Tamale. Most of those, especially those in the rural areas, will be developed into modern fishery distribution centers with capacities ranging from 500 to 5,000 tons. The Government also has plans to erect cold-storage units with a capacity of 10 to 100 tons at Bolgatanga, Tarkwa, Mampong/Ashanti, Akropong, Mim-Ahafo, and Fosu.

The Ghana Fishing Corporation usually arranges sales on a wholesale basis. To

Ghana (Contd.):

cater to the small consumer, however, retail outlets have been attached to the fishery distribution centers at Kumasi, Takoradi, Cape Coast, and Koforidua.

Other Government actions affecting the marketing of fishery products include the Wholesale Fish Marketing Act of 1963 authorizing a Marketing Authority to operate the established fishing markets at Takoradi, Elmina, and Tema as well as new markets which may be developed. Proposals for setting up the Marketing Authority were being developed, the Minister of Agriculture announced on July 3, 1963.

The Ghana Fishing Corporation is also developing a fish-smoking plant, and the Government plans to establish a fish cannery to pack sardines and other fish products.

Inland Fisheries: The Minister of Agriculture also expressed the Government's desire that all inland waters be used for fisheries production. Under the Government's irrigation plan, 213 dams have been built. All new lakes created by dam construction have been stocked with fish. Completion of the Volta Dam will create a new lake covering 3,000 square miles which can also be used for fisheries development. (United States Embassy, Accra, July 7, 11, and 14, 1963.)

TRAWLERS FROM JAPAN:

A large Japanese shipbuilding firm has been conducting private negotiations with the Ghanaian Government for the construction and export of fishing vessels to Ghana. Reportedly, a contract will be concluded to build 12 large stern trawlers of three size classes--1,200, 1,350, and 1,800 tons--for export to Ghana. The Ghanaian Government is reported to have offered to pay 75 percent of the total construction cost of 4,800 million yen (US\$13.3 million) over a period of 7 years. The Japanese Government, which was originally reported to be reluctant to permit the export of such a large number of fishing vessels for fear they would compete with Japanese fishing vessels (Japanese-caught fish landed and sold in Ghana are said to average about 1,000 tons a month in 1963), is now said to have approved informally their export. (*Suisan Keizai Shimbun*, July 6, 1963.)



Iceland

FISHERY LANDINGS BY PRINCIPAL SPECIES, JANUARY-MARCH 1963:

Species	January-March	
	1963	1962
	... (Metric Tons) ...	
Cod	71,530	83,201
Haddock	16,590	15,528
Saithe	3,166	5,682
Ling	2,784	4,305
Wolffish (catfish)	6,329	4,960
Cusk	3,535	3,399
Ocean perch	3,987	2,530
Halibut	284	440
Herring	62,420	27,442
Shrimp	291	187
Other	1,305	1,248
Total	172,221	148,922

Note: Except for herring which are landed round, all fish are drawn weight.

UTILIZATION OF FISHERY LANDINGS, JANUARY-MARCH 1963:

How Utilized	January-March	
	1963	1962
	... (Metric Tons) ...	
Herring^{1/} for:		
Oil and meal	43,812	12,552
Freezing	9,059	7,385
Salting	4,646	2,060
Fresh on ice	4,904	5,375
Canning	-	69
Groundfish^{2/} for:		
Fresh on ice	11,417	13,662
Freezing and filleting	52,401	53,335
Salting	20,982	35,109
Stockfish (dried unsalted)	20,165	14,961
Home consumption	3,767	3,452
Oil and meal	778	776
Shrimp for:		
Freezing	267	180
Canning	23	6
Total production	172,221	148,922

^{1/} Whole fish.

^{2/} Drawn fish.



Italy

FROZEN TUNA IMPORT QUOTA:

A Japanese press report states that the Italian Government is said to have approved the request of the Italian tuna-packing industry to increase the 1963 quota for duty-free frozen tuna imports by an additional 8,000 metric tons. This is the second increase granted to the industry, which now brings the total amount of duty-free frozen tuna imports to 40,000 metric tons (regular duty-free import quota--25,000 metric tons; first increase of 7,000 metric tons granted late 1962).

Italy (Contd.):

According to the press report, it is not clear whether the request for the 8,000-ton quota increase was approved by the Italian Government or by the Common Market, of which Italy is a member. Reportedly, this is of little consequence since the Common Market, based on past actions, can be expected to approve the recommendation for a quota increase submitted by the Italian Government.

Italian tuna packers are reportedly planning to seek an additional increase to 60,000 tons in 1964. To secure the 60,000-ton quota, they are said to be planning on launching an extensive tuna promotional campaign through the media of television, radio, press, and magazine, in an attempt to increase domestic tuna consumption. For this campaign, the Italian National Fish Cannery Association is reported to be planning on assessing a fixed fee per ton of tuna imported into Italy in order to raise 300 million liras (US\$480,000). However, since that amount is not expected to be sufficient for promotional purposes, the Association reportedly has asked the Japanese to contribute a similar amount.

The Association is also said to have urged the Japanese to give sufficient attention to the quality and kind of tuna they export to Italy, pointing to the frequent claims cases arising out of recent deliveries of unacceptable quality tuna. Reportedly, the Association is seeking to have the following provisions added to tuna purchase contracts concluded with the Japanese: (1) seller, buyer, and a Japan Export Trade Promotion Agency (commonly referred to as JETRO) representative personally confirm damages to fish; (2) for every one kilogram (2.204 lbs.) of precooked tuna which is rejected because of poor quality, buyers to be reimbursed a sum equal to the c.i.f. price of 2.2 kilograms of frozen tuna; and (3) 10 percent of the sales contract price to be held in reserve for one month for settling claims against poor quality fish.

The Japan Frozen Foods Exporters Association met on July 16, 1963, to study the Italian proposal but the Association was not expected to respond to the Italian request until after July 19 due to the absence of its chairman. (Suisan Tsushin, July 10, 13, & 17, 1963.)

Note: See Commercial Fisheries Review, August 1963 p. 92.



Japan

FROZEN ALBACORE TUNA EXPORTS:

The market for Japanese albacore tuna exports to the United States, which began to show signs of improving in mid-June, is reported to have firmed up more in July 1963. The rising trend in exports is attributed in part to the likelihood that the United States summer albacore catch off the Pacific Coast may be light this year. Albacore transshipments to Puerto Rico were reported to have been contracted at a c.&f. price of \$345-350 a short ton and direct shipments from Japan to the United States at \$340 a short ton, c. & f. Pacific Coast. (Suisan Tsushin, July 30, 1963.)

Note: See Commercial Fisheries Review, August 1963 pp. 93 & 94.

EXPORTS OF FROZEN TUNA
FOR FISCAL YEAR 1962:

Data compiled by the Japan Export Frozen Tuna Producers Association on direct exports of frozen tuna (shipments made from Japan proper and approved by the Association) indicate that exports of round albacore declined by 24 percent in fiscal year 1962 (April 1962-March 1963), from

Table 1 - Japanese Direct Exports of Frozen Tuna to United States and Canada, Fiscal Years, 1962/63 and 1961/62 1/

Product	Albacore		Yellowfin		Big-eyed		Bluefin		Skipjack	
	1962	1961	1962	1961	1962	1961	1962	1961	1962	1961
(Short Tons)										
Round	18,901	25,024	-	-	218	621	-	48	226	572
Gilled & gutted	-	-	32,809	23,689	-	-	-	-	-	-
Dressed	-	10	21	484	-	-	-	-	-	-
Loins	1,153	1,355	3,732	3,157	349	88	135	83	-	1
Fillet	-	-	2,840	3,980	-	-	-	-	-	-
Transshipments 2/	4,419	4,732	991	1,018	-	-	-	-	-	-

1/ Japanese fiscal year begins in April of the given year and ends in March of the following year.

2/ Transshipped through Sava, Fiji Islands. Transshipments made through this port considered direct exports under Japanese tuna export control regulations.

Table 2 - Japanese Direct Exports of Frozen Tuna to Europe, FY 1962/63 and 1961/62

Country	FY 1962	FY 1961
(Short Tons) 1/.		
France	1,155	-
Italy	2,952	83
Yugoslavia	1,282	-
Spain	55	-
Other	5	6
Total	5,449	89

1/ Exports to Europe compiled in short tons so as to make them comparable to exports to United States. This is common practice with Japanese tuna industry.

Table 3 - Japanese Direct Exports of Frozen Round Albacore to the United States and Canada, FY 1962/63 and 1961/62

Type of Fishery	1962	1961
(Short Tons) ..		
Pole-and-Line Fishery:		
Fresh 1/	9	450
Iced 1/	111	1,657
Long-Line Fishery:		
Clipper	14,601	15,664
Motherhip	4,180	7,253
Total	18,901	25,024

1/ Products subsequently frozen for export.

Japan (Contd.):

Table 4 - Japanese Frozen Tuna Transshipments,
FY 1960/61-1962/63

Species	1962	1961	1960
... (Short Tons) ...			
Albacore.....	14,111	12,570	5,938
Yellowfin.....	10,958	13,547	24,025
Other.....	3,553	2,152	-
Total.....	28,622	28,269	29,963

Table 5 - Japanese Frozen Tuna Transshipments by
Transshipment Port, FY 1960/61-1962/63

Transshipment Port	1962	1961	1960
... (Short Tons) ...			
Cristobal, Panama, Canal Zone ...	457	1,719	8,243
Port-of-Spain, Trinidad	8,899	7,825	11,146
Freetown, Sierra Leone	3,353	12,843	7,774
Dakar, Senegal	2,222	3,896	2,800
Tema, Ghana	3,587	1,667	-
Las Palmas, Canary Islands	4,380	219	-
Abidjan, Ivory Coast.....	3,108	-	-
Santa Cruz de Tenerife, Canary Is. .	2,606	-	-
Total	28,622	28,269	29,963

25,024 short tons in FY 1961 to 18,901 tons in FY 1962. Exports of gilled-and-gutted yellowfin increased by 38 percent, from 23,889 short tons to 32,809 tons. Most notable was the large increase in direct exports of frozen tuna, primarily yellowfin, to European countries.

Data compiled by the Association on tuna transshipments indicate that FY 1962 transshipments totaled 28,623 short tons, compared to 28,269 tons in FY 1961 and 29,962 tons in FY 1960. Transshipments of albacore increased by 12 percent over FY 1961 and by 138 percent over 1960, while transshipments of yellowfin in FY 1962 declined by 19 percent and 54 percent, respectively, from FY 1961 and FY 1960. (Suisan Tsushin, August 8 & 12, 1963.)

FROZEN TUNA EXPORT PRICES:

Prices of Japanese-caught frozen yellowfin tuna exported to Italy were reported declining slowly at the rate of about US\$5 a short ton every 10 days as of July 1963. This trend started in May. Dressed yellowfin (gilled, gutted, without head but with tail), which sold in May for \$400 a short ton (c. & f. Italy), were reported selling in mid-July for \$360-365 a short ton.

In contrast to the Italian market, the United States market for Japanese tuna was clearly showing signs of improvement. Offers for frozen round albacore at \$290-295 a short ton and for frozen gilled-and-gutted yellowfin at \$250 a ton (all prices f.o.b. Japan) were reported in Japan, according to a press report dated July 19. This was about \$5-10 a ton higher than prices quoted in an earlier (July 9) press report. Despite the higher prices offered by United States tuna

buyers, Japanese exporters are reported to be reluctant to sell at those prices in view of market trends in Japan, and they are reported to be holding firm for higher offers for fish to be delivered after September. (Suisan Tsushin, July 9 & 19, 1963.)

Note: See Commercial Fisheries Review, August 1963 p. 92.

TUNA MOTHERSHIP OPERATING
IN EASTERN PACIFIC:

The Japanese portable-vessel-carrying tuna mothership Keiyo Maru (3,700 gross tons) was reported in mid-July to be operating in the eastern Pacific Ocean south of Clipperton Island in the vicinity of 6°32' N. latitude-107°8' W. longitude. As of July 20, she was reported to have landed a total of 454 metric tons of fish--207 tons of big-eyed (45 percent of total catch), 73 tons of yellowfin (16 percent), 62 tons of spearfish (14 percent), and 112 tons of shark and other miscellaneous species (25 percent).

The Keiyo Maru, which departed Japan on June 5, is fishing with eight 20-ton portable fishing boats. Daily average catch per portable boat is reported to be about 2.5 metric tons. (Hokkai Suisan, August 5, 1963.)

ALBACORE FISHING IN
SOUTH PACIFIC POOR:

The two Japanese mothership fleets operating in the South Pacific Ocean, Nojima Maru (8,800 gross tons) and the Yuyo Maru (5,500 gross tons) reported in mid-July 1963 that fishing in general was poor. Fishing for albacore was said to be especially poor, with catches running about 15 percent of total landings. Reportedly, albacore usually make up from 30-40 percent of a mothership's total landings. Indications are Japanese tuna vessels operating from fishing bases in the South Pacific Ocean are also experiencing poor albacore fishing. (Suisan Tsushin, August 13, 1963.)

CANNED TUNA IN BRINE
SALES TO UNITED STATES INCREASED:

The Japan Export Canned Tuna Packers Association the latter part of July 1963 proposed 300,000 cases as the July-August regular sale of canned tuna in brine for export to the United States, plus an additional lot of

Japan (Contd.):

200,000 cases. However, the packers asked that the additional lot be set at 250,000 cases, even if it meant they had to pay the promotion expenses for the increased amount. It was finally agreed that the planned July-August sale would be 550,000 cases. The industry hopes to reach this year's export target of 2,310,000 cases with the allocation of 150,000 cases for the October sale and the same amount for the November sale. (Japanese periodical, July 31, 1963.)

CANNED TUNA IN BRINE SEVENTH SALE TO UNITED STATES:

The seventh sale of canned tuna in brine for export to the United States was approved by the Canned Tuna Sales Standing Committee of the Japan Canned Foods Exporters Association on July 16, 1963. The quantity approved for export was 150,000 cases, which is 20,000 cases more than the sixth sale. Like the sixth sale (June 25), the amount of each kind of pack (white meat or light meat) to be offered for sale was not specified. Export prices are US\$10.50 a case for white meat tuna and \$7.65 a case for light meat tuna, both prices f.o.b. Japan, for No. 1 (7-oz.) 48's, the same as for earlier sales. (Suisan Tsushin, July 18, 1963.)

Note: See Commercial Fisheries Review, August 1963 p. 91.

EXPORT MARKET FOR CANNED TUNA IN OIL DULL AS OF MID-JUNE:

Packing of canned tuna in brine in Japan was at a normal pace as of the middle of June 1963. It was believed that it would come up to expectations, with the white meat pack comprising 80 percent of the total. With the packing of tuna in brine almost at an end, packers are inclined to shift to packing tuna in oil but are greatly concerned with the poor export market of canned tuna in oil, white meat in particular.

Landings of skipjack tuna suddenly increased since the middle of June but as packers became interested, the price of canned skipjack dropped to ¥2,350 (US\$6.50) a case from ¥2,400 (US\$6.63) in May. The landed price of skipjack to the packers ranged from ¥75-80 a kilogram (US\$188-200 a short ton), which is not an attractive price to the canners.

EXPORT TRENDS FOR CANNED TUNA IN BRINE, CANNED SALMON, AND CANNED CRAB MEAT, 1962:

The Japanese Ministry of International Trade and Industry on June 28, 1963, released a report on Japan's foreign trade in 1962. A section of the report contained information on selected canned fishery products as follows:

Canned Salmon: Japanese exports of canned salmon in 1962 were up about 108 percent in quantity and 146 percent in value from those in 1961. The increase was due mainly to larger shipments to Great Britain, which actively began to purchase Japanese canned salmon in late 1961. Canned salmon exports to Australia declined somewhat due to competition from United States and Canadian products. Canned salmon

Table 1 - Value of Japanese Exports of Selected Canned Fishery Products, 1961-1962

Product	1962	1961
 (US\$1,000)	
Tuna in brine	19,487	19,172
Salmon	91,231	37,094
Crab	10,867	11,856

Table 2 - Japanese Exports of Selected Canned Fishery Products, by Country of Destination, 1962

Commodity and Destination	Quantity 1/	Value
	Metric Tons	US\$1,000
Tuna in brine:		
United States	12,612	12,868
Canada	1,599	1,594
West Germany	2,228	1,578
Switzerland	888	844
Lebanon	479	439
Belgium	395	355
Aden	288	225
Netherlands	264	211
Ryukyu Islands	222	147
Kuwait	219	159
Saudi Arabia	191	142
Australia	153	103
Other countries	1,075	822
Total canned tuna in brine	20,613	19,487
Salmon:		
Great Britain	44,863	79,246
Australia	3,167	3,845
United States	2,294	2,580
Belgium	1,246	1,414
Netherlands	1,237	1,294
Ireland	578	788
France	472	518
New Zealand	342	355
South Africa	190	226
Sweden	141	159
West Germany	111	121
Italy	106	109
Other countries	497	576
Total canned salmon ..	55,244	91,231
Crab Meat:		
United States	1,579	4,504
Great Britain	1,390	3,574
France	302	814
Belgium	160	527
Australia	122	304
Sweden	109	262
Netherlands	87	235
Canada	66	135
Other countries	171	512
Total canned crab meat ..	3,986	10,867

1/Quantities are net content weights.

Japan (Contd.):

sales to the United States showed only a slight increase in 1962.

Canned Tuna in Brine: Japanese canned tuna in brine exports in 1962 were about the same as in the previous year. In addition, there were exports of canned tuna in oil which were not shown separately. Any future expansion of Japanese canned tuna exports will depend mainly on whether Japan can acquire additional tuna supplies.

In the United States, Japanese canned tuna products are competing with Portuguese, Ecuadorean, and Peruvian products; and, in West Germany, with French, Portuguese, and Spanish products.

Canned Crab Meat: Japanese canned crab exports reached a peak in 1959 and then began to decline as a result of (1) growing domestic demand for canned crab meat; (2) competition in the United States market from Alaskan products; and (3) the large influx of Soviet canned crab meat into the European market. The 1962 Japanese canned crab pack surpassed 1961 production, but in 1962 the downward trend in export was further accelerated as a result of increased competition from Alaskan products in the United States market and Soviet price reductions in the European market. Nihon Suisan Shimbun, July 1, 1963.)

ASSOCIATION CONTRIBUTES TO UNITED STATES CANNED TUNA PROMOTION:

The Japan Frozen Tuna Producers Association's Executive Committee, after a meeting held on July 18, 1963, announced that the Association will contribute \$50,000 to the U. S. Fish Cannery Association for the joint canned tuna sales promotion campaign to be conducted in the United States during August-September. One-half of that amount is expected to be contributed by the Japanese Government. The Frozen Tuna Producers Association was planning to meet with the Japan Canned Tuna Producers Association to discuss the canning group's participation in the joint promotion effort. (Nihon Suisan Shimbun, July 22, 1963.)

PACKERS PLAN TO CONTRIBUTE TO PROMOTION OF CANNED TUNA:

The Japan Export Canned Tuna Manufacturers Association as of late July 1963 was examining a plan for the special sale of about 250,000 cases of canned tuna over and above the normal open sale for that period and for the packers to pay for the sales promotion expense of US\$250,000. The promotion is to be used by exporters for the special sale of 250,000 cases. The plan had been drafted because:

1. The pace of open sales for canned tuna this year has been extremely slow due to the

drop in demand during the second quarter of 1963 in the United States.

2. The pack, on the other hand, progressed at such a swift pace as to nearly fulfill this year's quota by the end of July.

3. Next year's quota would be cut substantially because the pressure from accumulated stocks would be stronger.

4. There is some margin for packers to contribute to the expense of the sales promotion because production costs for this year's pack have been lower than last year.

The sales promotion money would be distributed among the trading firms according to the amount of canned tuna they handle. On July 25, the department of the exporters' association came to an agreement to cooperate with the packers. (Japanese newspaper item, July 26, 1963.)

JAPANESE PLAN TO SUPPORT ITALIAN CANNED TUNA PROMOTION:

The Japanese frozen tuna industry is reported to be planning on financially supporting the joint Italian-Japanese tuna publicity campaign proposed by the Italian Tuna Packers Association. The Italian Association proposes to spend a total of 600 million liras (US\$960,000) for advertising and plans to assess 10 liras (US\$0.016) per kilogram (2.2 lbs.) of imports, with each country contributing one half that amount. Italian imports of Japanese frozen tuna in 1964 are anticipated to total 60,000 metric tons. (Editor's Note: At present only 40,000 metric tons per year are admitted duty free into Italy.)

Prevalent view of the Japanese frozen tuna industry is that Japan should participate in the promotion, particularly in view of the enormous growth of the Japanese frozen tuna market in Europe. The amount of contribution has yet to be decided. (Suisan Tsushin, August 7, 1963.)

ECONOMIC STUDY OF TUNA FISHERY:

The Japanese Fisheries Agency, which has been conducting a series of basic investigations of the Japanese fishing industry, recently compiled a report entitled, "Observations on the Economy of the Tuna Fishery." The report contains an analysis of tuna fishery problems, such as decline in hook rate (catch per 100 hooks), labor shortage, labor recruitment, and management practices. In particular, it clarifies the nature and extent of the decline in hook

Japan (Contd.):

rate and presents an analysis of the effect of this decline on fishery production and management.

Essentially, the report points out that: (1) productivity (catch per tonnage of vessel) of the tuna fishery, particularly the pole-and-line skipjack fishery (which is subject to drastic fluctuations in production), has declined; (2) profits of fishing vessel owners have increased due to rising fish prices despite decline in fishing effort after 1959 peak year; and (3) wages earned by fishermen on small tuna vessels are at a low level and small vessel operators are thus faced with recruiting problems; consequently, the need for improving management on their part.

The report points out:

The Japanese tuna fishery achieved a spectacular growth after World War II. However, in recent years catch of skipjack tuna by the coastal combination tuna fishing vessels (vessels engaged in more than one fishery) have shown marked fluctuations. In addition, the landings made by the Japanese tuna fleets have annually shown a smaller rate of increase.

The postwar expansion of the Japanese tuna fishery can be attributed to the expansion of the tuna long-line fishery in the Atlantic Ocean and in distant waters through the establishment of overseas fishing bases. Up until 1952, pole-and-line fishing occupied a dominant position in the Japanese tuna fishery, but since 1959 catches by that fishing method began to fall off. The increase in tuna landings can be attributed to the enlargement of fishing vessels but it cannot be denied that the increase in the number of 39-ton tuna vessels or under, for which licensing requirement was removed, has contributed to the increase in production after 1957.

In order to evaluate the effect that the increase in the number of 39-ton tuna vessels had on production, the Fisheries Agency conducted a study on tuna fishing vessels operating out of Japan. Vessels were classified according to size so as to obtain catch per tonnage of vessel.

The study revealed that production by tuna long-liners under 500 tons gross was stabilized, their catch varying according to intensity of fishing effort. Productivity (catch per tonnage of vessel) of long-liners in the 200- to 500-ton class fell off somewhat after reaching a peak in 1958. Productivity per day at sea showed a decline among long-liners in the 100- to 200-ton class. Pole-and-line skipjack vessels were shown to have a productivity at least about twice that of the long-line vessels. It became clear that their productivity fluctuated drastically from year to year.

Tuna hook rate was found to increase with increasing distance of the fishing grounds from Japan. Also, the yearly variation in hook rate indicated that the higher the hook rate the greater the decline in productivity. Thus, the productivity of fishing grounds is of such character that it cannot be considered apart from the size of fishing vessels employed in the fishery, where the trend is to use larger vessels. This trend toward enlargement of vessels is really not for the purpose of making it possible to fish in more highly productive waters. Rather, employment of large vessels makes it possible to reduce the frequency of trips from fishing port to fishing ground. This in turn increases the number of days that the vessels can operate at sea. It is for this reason that fishing vessel owners are striving to enlarge their vessels.

Examination of fluctuations in economic productivity reveals that the intensity of catch effort of vessels in the 30- to 50-ton class during the period between 1957 and 1959 increased 3.9 times but productivity, as measured by effort, declined after 1957. Intensity of fishing effort of vessels in the 50- to 100-ton class reached a peak in 1959 but productivity declined to 1.03 (catch per tonnage

of vessel). Thereafter, fishing effort yearly declined, and in 1961 dropped to 64 percent that of 1957. Productivity of the 200- to 500-ton vessels yearly declined, from 1.4 in 1957 to 1.15 in 1961.

In 1957 all vessels under 200 tons gross showed financial losses. Only vessels in the 200- to 500-ton class recorded a profit rate of 25 percent. However, from 1958 vessels of all classes began to show profit. In 1961 the 30- to 50-ton vessels realized a profit rate of 26 percent. The 50- to 200-ton vessels all achieved remarkable profits in 1959 and subsequently continued to increase their profits. What is important is that after 1959 fish price increased, which helped offset declining productivity. It is conceivable that profitability as measured by effort was uniformly maintained as a result of the rise in fish price (more basically the rise in demand) and this contributed to the growth of the tuna fishery.

Fishing vessels of all sizes have shown yearly increases in profits. However, vessels in the 100- to 500-ton classes showed a slight decrease in profits in 1961 as compared with 1960. A comparison of profits earned by vessels of different sizes in 1961 shows that vessels in the 30- to 50-ton class realized the highest profit rate of 12.5 percent, followed by vessels in the 50- to 100-ton and 200- to 500-ton classes, which netted around 7 percent. Vessels in the 100- to 200-ton class earned the lowest profit (3 percent).

The reason for the high rate of profit earned by the 30- to 50-ton vessels is that fishermen on those vessels are paid low wages, corresponding to about one-half the wages paid to fishermen employed on 200-ton vessels. Fishermen on 30- to 50-ton vessels receive about the same wages as those paid by medium and small business enterprises employing 5-29 workers. At such a low wage level, it is difficult to recruit labor for the fishing fleet, and that is why fishing vessel owners are being urged to improve promptly their management of operations. However, the fact is that if owners of 30- to 50-ton vessels were to raise fishermen's wages now to the wage level of fishermen employed on vessels over 200 tons, they would have to operate in the red throughout this year. (Suisan Keizai Shimbun, June 20, 1963.)

* * * * *

TUNA FISHERMEN SIGN NEW WAGE CONTRACT:

A new Japanese fishermen's wage contract, described as radically different from existing agreements, was concluded on July 1, 1963, between the Yaizu Vessel Owners Association and the Yaizu chapter of the Japan Seamen's Union. The main feature of the new contract, which affects all tuna fishermen employed on tuna long-line vessels operating out of Yaizu, is the payment of monthly minimum guaranteed wages. The agreement was the outcome of the 18-month study by a 14-man committee composed of an equal number of representatives from the Vessel Owners Association and the Japan Seamen's Union. Forerunner to that agreement was a labor contract signed in December 1961 between the Association's Tuna Committee (involving 39 Association members operating 53 tuna vessels, with a total crew of 1,500 men) and the Japan Seamen's Union, which had attracted considerable attention at that time for having broken the 400-year-old traditional Japanese management concept regarding the operation of fishing vessels.

Principal provisions in the new wage contract are as follows:

1. Minimum guaranteed wages shall be paid to crew members sailing on tuna long-line vessels and they shall be determined on the basis of vessel carrying capacity. For this purpose tuna long-liners shall be grouped into two classes, over and under 200 tons. Wage paid to one deckhand shall be used as a standard in calculating all wages. Vessel crews shall be

Japan (Contd.):

grouped into nine wage classes, the highest being that of fishing captain, whose guaranteed wage shall be 1.7 times that of a deckhand, followed by ship master, chief engineer, and chief radio operator, in that order.

2. Monthly minimum guaranteed wage shall be 13,500 yen (US\$37.50), payable on the 25th day of each month.

3. In addition to guaranteed wages, vessel crews shall receive shares of the landings (after they have been landed) based on a fixed percentage established for all vessels.

4. Crew members debarking during periods of vessel repair shall be paid guaranteed wages in full if they are on duty status. However, those on duty status but

KING CRAB FISHERY TRENDS IN
BRISTOL BAY, EARLY JULY 1963:

In early July 1963, the two Japanese king crab factoryships, Dainichi Maru (5,858 gross tons) and Tokei Maru (5,385 gross tons), operating in Bristol Bay reported fishing to be poor and on the decline, with catches averaging 4-5 crabs per tan (shackle). As of July 9, the Dainichi Maru was reported to have produced well over 70,000 cases or over 60 percent of her production quota of 115,000 cases of king crab, and the Tokei Maru 61,900 cases or barely half her target of 120,000 cases.



Japanese king crab mothership Tokei Maru.

who return home shall be paid 60 percent of their guaranteed wages.

Reportedly, under the new wage system, fishermen are assured a stable livelihood for they will have a guaranteed income at all times, even during periods when they are off the vessel or when fishing is poor. Besides, all trip expenses other than for those clearly established as consumption items (i.e., food, medicine) are to be borne by the vessel owner and, unlike before, will not be shared between vessel owner and crew.

Under the old system of compensation, vessel earnings, after deducting such items as expenses for fuel, bait, vessel maintenance, and gear repairs, were shared between vessel owner and crew members at rates varying between 60-70 percent for management and between 30-40 percent for labor. Vessel crews received no fixed wages and their earnings varied with catch quantity. The share system, therefore, resulted in very unstable living conditions for fishermen and their families.

Concerning the adoption of the new wage system for tuna fishermen, the chairman of the Yaizu Vessel Owners Association commented as follows:

"Adoption of the guaranteed wage system imposes a much heavier burden on vessel owners, but such a system is necessary to modernize fishing vessel management. Vessel owners must realize this and earnestly endeavor to abide by the contract. We have decided to initially adopt this system in the relatively stable tuna long-line fishery but hope to study next the possibility of applying it in the skipjack pole-and-line fishery." (Nihon Suisan Shimbum, July 5, 1963.)

For the over-all fishing season to July 9, the Dainichi Maru was said to have averaged 10 crabs per tan, and the Tokei Maru 8 crabs per tan. In 1962, the Japanese king crab fleets averaged 10.8 crabs per tan, and in 1961 (spring operation), 11.7 crabs per tan. (Suisan Tsushin, July 11, 1963, and other sources.)

FISHING COMPANY COMMENTS
ON 1963 BERING SEA OPERATIONS:

Officials of a Japanese fishing company which operated two mothership fleets in the Bering Sea during the first half of 1963 have stated that fishery resources south of the Aleutian Islands are not as abundant as those to the north. They commented that large-scale mothership-type operations would not be desirable south of the Aleutian chain. The company's 1,500-ton stern trawler Akebono Maru No. 51 worked the Gulf of Alaska during the 1963 season.

The company's mothership Chichibu Maru (5,500 gross tons), and the stern trawlers Ake-

Japan (Contd.):

bono Maru No. 51 and Akebono Maru No. 52, were scheduled to return from northern waters to Japan in mid-July 1963. The vessels were expected to return to the Bering Sea fishing grounds in August 1963.

The company's other mothership, the Chichibu Maru No. 2, was scheduled to return from the eastern Bering Sea to Hakodate, Japan, on July 9, 1963. It was then expected to be assigned as a carrier vessel to a fishing base at Las Palmas, Canary Islands.

Officials of the Japanese company said that a mistake had been made in dispatching the Chichibu Maru No. 2 to the Bering Sea very early in the 1963 season on February 25. Reportedly, the 80-ton catcher vessels assigned to the mothership were not able to fish during most of March because of rough sea conditions. (Suisan Tsushin, July 6, 1963.)

FACTORYSHIP FISH-MEAL PRODUCTION AND SALES:

The two large Japanese fishing companies operating the fish meal factoryships Soyo Maru (11,192 gross tons) and Gyokuei Maru (12,100 gross tons) in the eastern Bering Sea in 1963 are reported to have contracted agreements to release on the Japanese domestic market a total of 9,000 metric tons of factoryship-produced fish meal at 62,500 yen (US\$174) a metric ton. This represents a price increase of about 10,000 yen (US\$28) a metric ton over 1962 prices. Production of the two factoryships is expected to total about 17,000 metric tons for the 1963 season, of which 8,000 metric tons are to be diverted to their company's affiliated enterprises.

In view of the excellent demand for fish meal in Japan, another Japanese company, which pioneered the development of the factoryship-type fish-meal operations and which in 1963 terminated its Bering Sea fish-meal operations (two factoryships) after suffering large losses in 1962, is reported to be considering the possibility of reactivating its Bering Sea fish-meal operations in 1964. In hopes of establishing a joint fish-meal operation in Chile, that company has been negotiating with Chilean interests for several months, but the negotiations are reported not to be progressing smoothly. As a result,

that company is now reported to be studying the the feasibility of dispatching its 14,000-ton fish-meal factoryship Renshin Maru to the Bering Sea in 1964 instead. (Suisan Tsushin, August 9, 1963.)

EXPORTS OF FISHERY PRODUCTS, JANUARY-JUNE 1963:

Japan's exports of fishery products during January-June 1963 totaled 166,015 metric tons valued at US\$78.8 million, a decline of 1.6 percent in quantity and 29.7 percent in value from shipments during January-June 1962 of 168,741 metric tons valued at \$112.1 million. (United States Embassy, Tokyo, July 26, 1963.)

EXPORTS OF FROZEN HALIBUT, JANUARY-JUNE 1963 AND 1962:

Japanese exports of frozen halibut in the first 6 months of 1963 were up 20.4 percent in quantity and 40.6 percent in value from those in the same period of 1962, according to data reported by the Japanese Frozen Food Export Association.

Japanese Exports of Frozen Halibut by Months, January-June 1963 and 1962					
Month	Destination	1963		1962	
		Qty.	Value ^{1/}	Qty.	Value ^{1/}
		Short Tons	US\$	Short Tons	US\$
January	United States . . .	47.6	39,766	57.0	34,820
	United Kingdom . .	3.5	1,934	-	-
	West Germany . . .	1.0	760	-	-
February	United States . . .	59.6	50,039	50.0	33,510
March	United States . . .	56.3	43,219	26.0	16,084
April	United States . . .	22.5	18,042	12.3	8,208
	United Kingdom . .	14.7	9,129	-	-
	Lebanon	0.6	440	-	-
May	United States . . .	6.0	3,810	19.4	15,381
June	United States . . .	11.6	7,290	33.0	23,192
	United Kingdom . .	14.7	10,030	-	-
Total exports Jan.-June . .		238.1	184,459	197.7	131,195
^{1/} Value f.o.b. Japan.					

Shipments to the United States accounted for 85.5 percent of the quantity and 87.9 percent of the value of Japan's total halibut exports in January-June 1963. Shipments to the United States in the first half of 1963 were up 3.0 percent in quantity and 23.6 percent in value from those in the same period of 1962 when the United States was Japan's only market for frozen halibut. (United States Embassy, Tokyo, July 30, 1963.)

EXPORT PRICES FOR CANNED SHRIMP REDUCED:

Prices of canned shrimp for export were reduced recently by Japan's two leading shrimp processing firms.

Japan (Contd.):

Prices per case of 24 1/2-lb. cans were cut US\$0.75-1.00 effective June 26 (retroactive to June 10), and cases of 48 1/4-lb. cans were cut \$1.00-1.10 as of July 10.

Japanese Export Prices for Canned Shrimp			
No. of Cans Per Case	Size Classification of Shrimp	Revised Price (f.o.b. Yokohama)	Previous Price (f.o.b. Yokohama)
..... (Per Case)			
24 1/2-lb. flats 1/ ..	Small	\$6.25	\$7.00
	Tiny	5.75	6.75
	Broken	5.25	6.00
48 1/4-lb. flats 2/ ..	Small	8.50	9.60
	Tiny	7.50	8.50
	Broken	6.50	7.50

1/Drained weight 4 1/2 oz.

2/Drained weight 2 1/2 oz.

According to an official of one of the firms, it was necessary to reduce export prices of Japanese canned shrimp for the United States market if they were to sell their product. The reason given was because of sharply lower prices for United States canned shrimp resulting from increased Gulf of Mexico shrimp landings. (Fisheries Attache, United States Embassy, Tokyo, July 19, 1963.)

JAPANESE FIRM CONCLUDES CONTRACT TO EXPORT HAKE TO SPAIN:

A large Japanese fishing company is reported to have concluded an agreement to deliver to Spain hake caught by its large stern trawlers operating off the Republic of South Africa. In 1963 about 3,000 metric tons of hake are expected to be delivered to Spain.

To transport the hake, the Japanese firm is planning to dispatch in September the refrigerated carrier vessel Banshu Maru No. 36 (998 gross tons) to South Africa. The Banshu Maru is scheduled to make three trips to Spain by the end of March 1964. The first shipment of hake is now being transported to Spain by another carrier vessel. (Minato Shimbun, July 26, 1963.)

EXPORTS OF CANNED SAURY:

Data tabulated by the Japan Canned Sardine and Saury Sales Company show that Japanese canned saury contracted for export during the August 1962-July 1963 (adjusted) business year totaled 1,055,071 cases, a new high. Consignments to the Sales Company during the business year, including 156,381 cases of carry-over from the previous busi-

Japanese Exports of Canned Saury for Business Year August 1962-July 1963	
Destination	Cases/
Philippines	404,518
New Guinea	171,889
Egypt	148,053
Ceylon	119,875
Burma	100,105
Malaya	64,410
West Africa	19,631
Others	26,590
Total	1,055,071

1/Believed to be actual cases.

ness year, totaled 1,121,445 cases. (Suisan Keizai Shimbun, August 11, 1963.)

BUDGET INCREASE PROPOSED FOR JAPANESE EXPORT TRADE PROMOTION FOR FISHERIES:

The Japanese Ministry of Agriculture and Forestry is reported to have included in its budget proposal for FY 1964 (April 1964-March 1965) a request for additional funds to expand the Japan Export Trade Promotion Organization's (commonly referred to as JETRO) activities in the field of fisheries. The increase in JETRO's FY 1964 budget would be for stationing a fisheries representative on American Samoa and for expanding tuna promotional activities in Europe. (Suisan Keizai Shimbun, July 30, 1963.)

FROG INDUSTRY AND EXPORTS:

The North American edible species of common bullfrog (Rana catesbeiana) was first introduced to Japan in 1917 when a shipment of 24 frogs from New Orleans, La., was sent to the University of Tokyo. The frogs were raised and propagated at the University's Institute of Infectious Diseases, and the stock was distributed in the swampy regions of the Tome River estuary located north of Tokyo and to areas in Osaka Prefecture. The estuary of the Tome River is considered the most important frog production area in Japan, and is followed in importance by the Osaka, Ehime, and Togawa Prefectures.

Bullfrog farming in Japan was discontinued after World War II and has not been resumed since. Japanese frogs presently marketed, both for domestic use and for export, are entirely wild-caught frogs from the regions listed.

Japanese Exports of Frozen Frog Legs, 1960-62						
Destination	1962		1961		1960	
	Qty.	Value	Qty.	Value	Qty.	Value
	1,000 Lbs.	US\$ 1,000	1,000 Lbs.	US\$ 1,000	1,000 Lbs.	US\$ 1,000
United States	1,323	1/	1,433	772	824	630
Other countries ...	447	1/	9	6	7	7
Total	1,770	1,383	1,442	778	831	637

1/Value not shown separately.

Japan (Contd.):

Japan's frog production is largely for export with only about 10 percent used locally. (United States Embassy, Tokyo, July 3, 1963.)

ATLANTIC OCEAN FISHERY TRENDS:

The Japanese vessel Taiyo Maru No. 15 (270 gross tons), which was converted from a trawler into a carrier vessel, departed for Las Palmas, Canary Islands, from the port of Shimomoseki in southern Japan on July 2, 1963. She was scheduled to be used to transport catches from the fishing grounds to the fishing base at Las Palmas.

A large Japanese fishing company was planning in early August 1963 to fly 51 fishermen from Japan to Las Palmas, Canary Islands, as replacements for the crew members presently sailing on the trawler Taiyo Maru No. 63 (1,500 gross tons). The company was reported to have arranged with an airline company to fly the 51 fishermen at a reduced rate amounting to about 160,000 yen (US\$444) per person.

The 51 crew members presently sailing on the Taiyo Maru No. 63, which departed Japan in June 1962, are to be flown back to Japan. They are expected to form the crew for a 2,500-ton class stern trawler now under construction. (Nihon Suisan Shimbun, July 8, 1963.)

The Japanese Foreign Ministry is reported to have received word that the United Nations Food and Agriculture Organization, after convening an executive session in Rome, June 24 to July 4, 1963, has formally announced its decision to establish a working party to evaluate the effects of increasing fishing pressure on the tuna resources in the Atlantic Ocean, where the fishery has rapidly developed in recent years, and thereby contribute to the conservation and rational development of those resources. Japan, which sent a delegate to attend the Rome session, has declared her intention to participate in the working party. (Suisan Keizai Shimbun, July 11, 1963.)

PROPOSALS FOR DISTANT-WATER TRAWLER OPERATIONS:

The Japanese Central Fisheries Coordination Council (highest Government-industry advisory group on fisheries), at a meeting

with the concerned Government agencies on July 10, 1963, presented its views on three proposals on fishing vessel licensing regulations being studied by the Japanese Government. They are: (1) licensing fishing vessels to engage in the distant-water trawl fishery; (2) licensing transfer of vessels diverted from other fisheries to the northern waters (Okhotsk Sea, Bering Sea, and North Pacific Ocean) trawl fishery; and (3) renewing fishing licenses for long-line and gill-net vessels engaged in the northern water fishery. (Under Japanese law, proposals adopted by the Council must be published in the Government Official Gazette to become legally effective.)

Concerning proposal 1, the Council recommended that the Government license a total of 48 standard vessels (50- to 300-ton class) for distant-water trawl operations--32 for the Atlantic Ocean (off African coast) and 16 for the South Pacific Ocean (off Australian and New Zealand coasts). However, the Japanese Government had in mind licensing vessels over 1,000 gross tons only as distant-water trawlers, based on the vessel replacement rate of four standard vessels for every one 1,000-ton vessel. Accordingly, the Government had been planning to license the operation of a total of 12 trawlers over 1,000 gross tons--eight for the Atlantic Ocean and four for the southwest Pacific. The Council, therefore, recommended that for licensing purposes three size categories be established, i.e., 50-300 tons, 300-1,000 tons, and over 1,000 tons.

The Council's recommendations concerning proposal 1 were:

1. Operational Area: (a) African Coast: The Atlantic and Indian Oceans lying within latitudes 40° N. and 40° S. and longitudes 25° W. and 55° E. However, the Mediterranean Sea east of 5°30' W. longitude, the Gulf of Aden west of 50° E. longitude, and the Red Sea are excluded. (b) Southwest Pacific: Area east of 105° E. longitude bound by latitudes 25° N. and 50° S.

2. Minimum Vessel Tonnage Requirements for Trawlers: Fifty gross tons for trawlers operating in the areas defined in "1."

3. Number of Vessels to be Licensed for Trawl Operations: (a) African Coast: 1/ 32 standard vessels or larger-size vessels. A standard vessel is a vessel over 50 gross tons but under 300 gross tons. Number of

^{1/}Japanese press reports indicate that a total of nearly 30 large Japanese trawlers (mainly in the 1,500- to 2,500-ton class) are already operating in the Atlantic Ocean.

Japan (Contd.):

larger-size vessels to be licensed shall be calculated at the rate of 2 standard vessels for every 1 vessel over 300 tons but under 1,000 tons, and 4 standard vessels for every 1 vessel over 1,000 tons. (b) South Pacific: 16 standard vessels or their equivalent in larger-size vessels, as stipulated in "3 (a)."

4. License Expiration Date: August 31, 1967.

Proposal 1 was to be published in the Japanese Government's Official Gazette on July 16, 1963.

Concerning proposal 2 (transfer of vessels to the northern waters trawl fishery), the Council approved the licensing of 5 vessels for trawl operations in the northern waters. The license applications were submitted to the Government by vessel owners seeking to enter into the northern waters trawl fishery under the three-year transfer program initiated by the Japanese Government in 1961.

The Council's recommendations concerning proposal 2 were:

1. Operational Area: North Pacific Ocean north of 48° N. latitude, east of 153° E. longitude, and west of 175° W. longitude. Five distant-water bottom trawlers of 70-300 gross tons shall be licensed to operate in that area. Additional vessels shall be licensed in accordance with the progress of the vessel transfer program.

2. Vessel Licensing Standard: Priority shall be granted to the licensing of vessels over 50 gross tons belonging to Hokkaido offshore trawl operators who wish to switch to distant-water trawling.

3. License Expiration Date: Vessel licenses granted in accordance with this public notice shall expire August 31, 1967. Licensing restrictions and conditions shall be the same as those applicable to existing licenses.

In regard to proposal 3 (renewal of licenses), which affects 19 long-line and gill-net vessels currently engaged in the northern waters fishery and whose licenses expire on October 31, 1963, the Council adopted the following recommendations:

1. Licenses for the 19 long-line and gill-net vessels (only those with actual catch performance records) shall be renewed.

2. The 19 vessels shall be authorized to operate in the North Pacific Ocean (including Bering Sea) north of 50° N. latitude, east of 170° E. longitude, and west of 175° W. longitude.

3. Licensing of fishing vessels shall be restricted to powered vessels of 100-500 gross tons.

4. Licenses granted in accordance with this public notice shall expire on August 31, 1967. (Suisan Keizai Shimbun, July 11, 1963.)

LANDINGS BY MAJOR FISHERIES, 1961-1962:

Japan landed a total of 6,864,000 metric tons of fish, shellfish, and aquatic products (including seaweed and kelp but not whales) in 1962, a new record according to data released by the Japanese Government's Statistics and Survey Division, Ministry of Agriculture and Forestry. The record landings were attributed to: (1) development of new fishing grounds in the Atlantic and Pacific Oceans, (2) increased fishing effort (expansion of the fishing fleet), and (3) increased fishing efficiency of newly constructed vessels.



Fig. 1 - A large catch of yellowtail unloaded at a Japanese port. Kumanonada, where these fish were caught, is considered one of Japan's best fishing areas.

Although Japan's 1962 landings of fish and shellfish increased only 2.3 percent (154,000 tons) over 1961, they were reported to be about 5 million tons more than the estimated 1962 fisheries landings of Peru and Communist China.

Japan (Contd.):

Japan's fishing industry is not only one of the most highly developed, but it is the largest in the world today. In addition to occupying an important position in Japan's economy in terms of monetary income, the industry provides the people of Japan with about 68.6 percent of their meat protein.

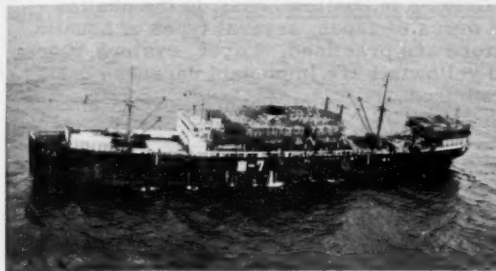


Fig. 2 - Japanese crab factoryship operating in the Bering Sea: Note large wooden structures which are used to dry nets.

Of Japan's 1962 landings, 1,713,000 metric tons were from the high-seas fisheries; 4,670,000 metric tons from the homeland marine fisheries; 362,000 metric tons from Japan's inland fisheries; and about 20,000 metric tons from fish culture in inland waters.



Fig. 3 - Forward deck of Japanese factoryship *Renshin Maru*. Shows fish catch while operating in the Bering Sea.

The fisheries of Japan are classified under the following 6 broad categories: (1) pelagic or distant-water fisheries, (2) domestic marine fisheries, (3) inland-water fisheries, (4) culture in shallow seas, (5) culture in inland waters, and (6) whaling. In 1962, Japanese fisheries production (ex-

cluding whales) was divided as follows:

1,713,000 tons distant-water fisheries;
4,676,000 tons domestic marine fisheries;
362,000 tons culture in shallow seas; 84,000 tons inland-water fisheries; and 20,000 tons fish culture in inland waters.

Table 1 - Japanese Landings of Fishery Products by Major Fisheries, 1961-1962

Type of Fishery	1962	1961
	(1,000 Metric Tons)	
Otter-trawl, mothership (North Pacific)	6	4
Otter-trawl, high seas (excluding North Pacific)	53	33
Otter-trawl (South China Sea)	1/	-
Trawl, large, mothership (North Pacific)	510	632
Trawl, carrier-type vessel	24	16
Trawl, large (South China Sea)	1/	1
Salmon fishery, mothership	44	53
Crab fishery, mothership	35	21
Long-line, tuna (based at overseas ports)	25	17
Long-line, tuna, mothership (Pacific and Indian Oceans)	64	33
Long-line, tuna (Atlantic)	60	82
Otter-trawl (west of 130° east longitude)	15	18
Trawl, large (west of 130° east longitude)	314	356
Long-line, tuna (Japan based)	386	351
Pole-and-line, skipjack	188	167
Trawl, 1- and 2-vessel (east of 130° east longitude)	659	648
Purse-seine	970	957
Dip-net, stick-held, saury	475	461
Gill-net, salmon	42	75
Pole-and-line, Pacific mackerel	178	155
Trawl, small sail	200	304
Angling, squid	533	377
Seine, beach and boat	123	112
Set-net, large	128	150
Set-net, small	82	83
Shellfish and seaweed collection	529	460
Inland water fishery	84	81
Other fisheries	796	634
Laver culture (shallow seas)	154	147
Oyster culture (shallow seas)	203	172
Other culture (shallow seas)	5	2
Fish culture (inland waters)	20	18
Total	6,864	6,710

1/ Less than 1,000 metric tons.

/ Includes fish and other culture, and pearl culture.

Note: Does not include production of whale fisheries.

Distant-Water Fisheries: Japan's major distant-water fisheries include: (1) mothership otter-trawl fishery (North Pacific); (2) otter-trawl fishery on high seas (excluding North Pacific); (3) otter-trawl fishery (South China Sea); (4) mothership large trawl fishery (North Pacific); (5) carrier-type trawl fishery (North Pacific); (6) mothership large trawl fishery (South China Sea); (7) large trawl fishery by other than motherships (South China Sea); (8) mothership salmon fishery; (9) mothership crab fishery; (10) tuna long-line fishery based at overseas ports; (11) mothership tuna long-line fishery (Pacific and Atlantic Oceans); (12) tuna long-line fishery (Atlantic); and (13) pearl-shell fishing in Arafura Sea (Australia).

Japan's distant-water fisheries have expanded rapidly in recent years. In 1956, distant-water landings totaled 165,000 tons and accounted for only 3.5 percent of Japan's total catch, whereas in 1962 distant-water landings made up 25 percent of the total catch. But the 1962 landings were 3.5 percent below the 1961 level of 1,774,000 tons. The decline from 1961 was attributed to decreased catches in the following fisheries: mothership large trawl fishery--North Pacific (-112,000 tons or 18 percent); mothership salmon fishery

Japan (Contd.):

(-9,000 tons or 17 percent); and tuna long-line fishery--Atlantic (-18,000 tons or 27 percent). The decline was partly offset by gains during 1962 in the otter-trawl high seas fishery--excluding North Pacific (+19,000 tons or 58 percent); carrier-type trawling--North Pacific (+8,000 tons or 50 percent); mothership crab fishery (+4,000 tons or 19 percent); tuna long-line fishery based at overseas ports (+8,000 tons or 47 percent); and mothership tuna long-line fishery in Pacific and Indian Oceans (+31,000 tons or 94 percent).

Inland-Water Fisheries: During 1962, landings of fish and shellfish from inland-water areas amounted to 84,000 tons, an increase of 4 percent over 1961 production. The gain was due mainly to a good harvest of fresh-water clams from the Tone River estuary in Chiba Prefecture. Clam production in 1962 totaled 28,776 tons as compared with 26,775 tons in 1961.

Culture in Shallow Seas: In the shallow sea areas of Japan, several types of aquatic culture are practiced. Laver, oysters, pearls, and yellowtail are important Japanese cultured products.



Fig. 4 - Japanese trawler fishing for a factoryship, *Tokei Maru*, in Bering Sea.

Domestic Marine Fisheries: In 1962, Japan's domestic marine fisheries landings were 3.7 percent greater than those in 1961 which totaled only 4,502,000 tons. In 1962, gains were recorded for the following major domestic marine fisheries: tuna long-line fishery based in Japan (+35,000 tons or 10 percent); skipjack pole-and-line fishery (+21,000 tons or 12 percent); purse-seine fishery (+13,000 tons or 1 percent); saury stick-held dip-net fishery (+14,000 tons or 3 percent); Pacific mackerel pole-and-line fishery (+23,000 tons or 15 percent); squid angling (+156,000 tons or 41 percent); and beach- and boat-seine fishery (+11,000 tons or 16 percent). Significant declines were reported in the trawl fishery west of 130° east longitude (-45,000 tons or 12 percent); trawlfishery east of 130° east longitude (-19,000 tons or 3 percent); salmon gill-net fishery (-33,000 tons or 44 percent); and the large set-net fishery (-22,000 tons or 15 percent).

Laver, or nori, is a special Japanese food produced from several species of red algae which are artificially grown and then prepared in thin sheets for drying. In 1962, Japanese laver production totaled 154,000 tons, up 5 percent from the 147,000 tons prepared in 1961.

The Japanese oyster culture industry produces edible oysters for domestic and export markets, as well as seed oysters for export. In 1962, approximately 203,000 tons of oysters were harvested, an increase of 18 percent over production in the previous year.

Pearl culture is one of the most unique industries in Japan. The process is started by inserting spherical nuclei (made from mussel shells) into oysters. This acts as an irritant which leads to pearl formation. Pearl oysters are transferred to areas of favorable water temperatures during the winter season,

Japan (Contd.):

and then returned to the original growing areas during the spring, summer, and fall months.

In 1962, 68 tons of pearls were produced, a decline of 12 tons from output in 1961. The decrease was caused by postponing the period of take from the early fall months to December in order to produce a better quality pearl.



Fig. 5 - Japanese trawler No. 18 *Soho Maru* operating in the Bering Sea as part of a mothership fleet.

Yellowtail culture in 1962, although small compared to production in other fisheries, increased twofold over the previous year. Production in 1962 amounted to 4,315 tons as compared to 2,337 tons in 1961.

Culture in Inland Waters: In 1962, inland fish culture yielded 20,000 tons of fishery products, an increase of about 11 percent over the previous year. Carp, eel, and rainbow trout are the most important food species of fish reared in inland waters. All three species were produced in larger quantities in 1962. The output of rainbow trout increased from 3,023 tons in 1961 to 3,505 tons in 1962; carp from 5,142 to 6,344 tons; and eel from 7,105 to 7,572 tons.

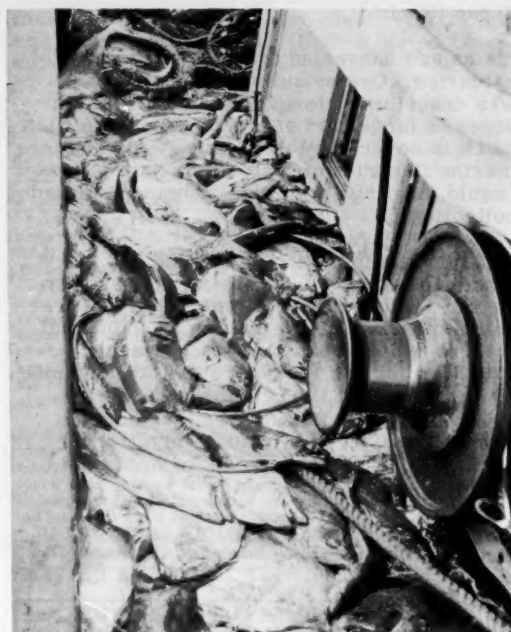


Fig. 6 - Close up of catch on the deck of the Japanese trawler No. 18 *Soho Maru* fishing in the Bering Sea.

Shellfish Landings: Japanese landings of most shellfish food products in 1962 were higher than in the previous year. The Japanese shellfish catch is produced by many different fisheries within the main categories described above. Distant-water motherships take king crab from the Bering Sea while

Table 2 - Japanese Landings of Leading Shellfish Products,^{1/} 1961-1962

Species	1962	1961
	Q, 000 Metric Tons	
Abalone and topshell .	9	8
Hard clams	11	12
Shortneck clams	114	108
Hen clams	5	5
Scallops	10	10
Oysters	203	172
White-lip shell	-	362
Other shellfish ^{1/}	155	179
Squid	612	455
Octopus	65	56
Shrimp	84	74
King crab	33	27
Other marine animals ^{1/}	75	85

^{1/}The Japanese Ministry of Agriculture and Forestry generally applies the classification "shellfish" to hard-shelled species. The classification "marine animals" includes squid, lobster, crab, frog, sea urchin, and sea cucumber.

Japan (Contd.):

clams are harvested from Japanese coastal estuaries. Oyster culture in shallow seas was described before. For statistical purposes, a large part of the Japanese shellfish catch is covered by the category "domestic marine fisheries" under the classifications "squid, angling" and "shellfish and seaweed collection."

Squid landings in 1962 totaled 612,000 tons, of which 533,000 tons were caught by angling. The remainder was taken by purse-seine and beach-seine fishing as incidental catches while fishing for other species. Squid landings in 1962 were the largest since 1953, and were 34 percent greater than in 1961. The squid fishing fleet has become more effective with the addition of larger vessels and the development of improved fishing methods and gear.

Whaling: Japanese whalers operating in the Antarctic, Bering Sea, and Japanese coastal waters caught 22,237 whales in 1962

Table 3 - Japanese Whale Catch by Area and Species, 1961-1962

Area and Species	1962	1961
	(No. of Whales)	
Antarctic:		
Blue	489	1,144
Fin	11,855	8,912
Humpback	2	211
Sei	941	1,773
Sperm	1,064	1,552
Total Antarctic catch ..	14,351	13,592
North Pacific:		
Blue	48	70
Fin	1,166	1,452
Humpback	17	9
Sei	260	4
Sperm	2,549	1,800
Total North Pacific catch	4,040	3,335
Coastal Area of Japan:		
Blue	5	3
Fin	39	71
Humpback	1	4
Sei	1,229	782
Sperm	1,685	2,101
Mink	238	322
Bottlenose	145	133
Pilot	80	133
Killer	47	54
Others	377	305
Total Coastal catch ...	3,846	3,918
Grand total	22,237	20,845



Fig. 7 - Japanese catcher boat towing a whale.

compared with 20,845 in the previous year. (Fisheries Attache, United States Embassy, Tokyo, July 19, 1963.)

Note: See *Commercial Fisheries Review*, Aug. 1963 p. 96.

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FISHING INDUSTRY OF HOKKAIDO PREFECTURE:

The fishing industry in the Hokkaido Prefecture of Japan has undergone important changes since 1940. It has been necessary to adapt to Japan's postwar loss of the Kurile Islands, the Habomai Islands, and Karafuto (Sakhalin). Some 40,000 fishermen were repatriated from those areas. In addition, there has been a drastic decline in the herring catch which had been the mainstay of Hokkaido's fishing industry. The decline in the herring catch is associated with the shifting of certain cold ocean currents northward.

In spite of changing conditions and declining herring catches, there has been an upward trend in Hokkaido's fishery landings since 1945. The catch of salmon, haddock, mackerel-pike, and squid in 1961 was several times larger than in pre-war years. Mechanizing

Landings of Principal Marine Products in Hokkaido Prefecture (Japan), 1961 with Comparisons						
Products	1961	1960	1955	1950	1945	1940
	(Metric Tons)					
Atka mackerel	102,912	116,415	118,612	55,794	73,525	19,257
Salmon and trout	87,582	77,131	56,409	21,495	7,130	13,085
Crab	18,991	22,642	39,752	12,929	5,033	8,206
Haddock	304,626	320,041	225,513	99,441	25,420	79,159
Cod	30,363	43,414	17,747	32,692	8,794	73,117
Herring	21,395	14,276	37,950	183,904	322,866	237,378
Squid	214,501	253,097	237,120	291,842	54,411	88,102
Flat fish	30,868	43,009	33,885	43,402	26,255	39,559
Seaweed	30,772	34,285	29,662	24,909	17,782	69,504

Japan (Contd.):

and adapting fishing fleets to new conditions was an important factor in the recovery of Hokkaido's fishing industry. Improved techniques of exploratory fishing also helped boost landings.

With the reopening of the North Pacific to salmon fishing in 1952, and crab fishing in 1953, large Japanese floating canneries (motherships) accompanied by smaller catcher vessels began operating in northern waters near the Aleutians and in the Sea of Okhotsk. In 1956, the Soviet Union, however, began imposing restrictions which have limited catches in the Northwest Pacific. The best fishing grounds for Hokkaido's fishing fleets have been in the Sea of Okhotsk and near the Soviet-held Kurile Islands. Future negotiations on fishing grounds are thus of deep concern to Hokkaido's fishing population. For example, some 3,500 Hokkaido fishing families engaged in coastal crab fishing off the Japanese Nosappu Peninsula have suffered a sharp decline in their catch. The Nosappu Peninsula is within sight of the Soviet-held Habomai Islands, and Soviet patrol vessels have confiscated fishing vessels in the area infringing upon what the Soviets consider their territorial waters.

The value of marine products landed in Hokkaido in 1961 totaled US\$130 million. Salmon accounted for about 25 percent of the value of the 1961 Hokkaido catch. In 1961, Hokkaido produced about 450,000 metric tons of processed fishery products. (This included dried, smoked, frozen, and canned fishery products.) The value of Hokkaido's processed fishery products in 1961 totaled \$149 million, up 27 percent from the previous year. In 1961, the value of Hokkaido's production of canned fishery products, such as canned salmon, trout, mackerel-pike, squid, and crab meat, totaled \$30 million, up 70 percent from 1960.

The value of Hokkaido's exports of fishery products in 1961 amounted to \$15.3 million, compared with \$17.8 million in 1960 and \$20.9 million in 1959. Hokkaido's exports of fishery products to the United States in 1961 were valued at \$4.0 million. (Data on Hokkaido fishery exports include products prepared in Hokkaido and shipped from Japanese ports in other Prefectures.) Fishery products prepared in Hokkaido for export include canned salmon, canned crab

meat, frozen scallops, fish meal, vitamin oils, and frozen whale meat. (United States Consulate, Sapporo, June 26, 1963.)

PERFORMANCE REPORT ON ELECTRICALLY-POWERED FISHERIES TRAINING VESSEL:

A study on the one year's operation of the electrically powered fisheries training vessel *Fuji Maru* (325 gross tons), belonging to the Shizuoka Prefectural Government, Japan, is reported to have shown that electrically powered commercial fishing vessels can have many advantages lacking in conventional Diesel-powered vessels. They are: saving in engineroom space; simplicity of operation and rapid detection of engine trouble; saving in engineroom manpower; safety in operation; and more efficient utilization of available sources of power. Some disadvantages cited are the higher cost of construction (from 10-20 percent) and slightly higher rate of fuel consumption.

Fuel consumption is said to depend on the running time to the fishing grounds and the number of days spent on the fishing grounds. Compared to Diesel-powered vessels, electrically powered vessels would consume greater quantities of fuel while running to and from the fishing grounds but less fuel while actually fishing.

Fuel Consumption Rates of Propellant Motor of *Fuji Maru*

R.P.M.	Electrical Output	Fuel Consumption per Day	Speed
	<u>Kilowatt</u>	<u>Metric Tons</u>	<u>Knots</u>
240	250	2.16	9.1
250	280	2.31	9.4
260	320	2.50	9.7
270	360	2.71	10.0
280	400	2.94	10.3
290	440	3.21	10.5

Specifications and complement of the *Fuji Maru*, which was built at a cost of 120 million yen (US\$333,000), are:

Gross tonnage	325
Total length	126.3 feet
Beam	24.6 feet
Speed	11 knots
Generator motor (2)	430 horsepower each
Generator (2)	360 kilovolt-ampere each
Propellant motor	485 kilowatt
Crew	31
Student trainees	41
Instructors	4

In the case of the *Fuji Maru*, on her first trial fishing trip (65-day trip to Sunda Islands in the Indian Ocean), she consumed an average of 3.2 tons of fuel per day while running to and from the fishing ground, less than 1.2 tons per day while fishing (even on days when the weather was bad), and averaged 1.86 tons per day for the entire trip. Diesel-powered long-line fishing vessels of the same size as the *Fuji Maru* are estimated to consume 2.5 tons of fuel per day while running to and from fishing grounds and 1.5 tons per day while fishing, and average from 1.6-1.8 tons per day per trip. (Suisan Keizai Shimbun, August 4, 1963.)

"KURUMA" SHRIMP-BREEDING EXPERIMENTS SUCCESSFUL:

A Japanese scientist claims that after 30 years of study he has succeeded in breeding

Japan (Contd.):

the "kurma" shrimp artificially. In the course of his researches he discovered the breeding behavior of this species, which calls for precisely regulated conditions. He also had difficulty in finding a suitable food for the larvae, finally choosing *Skeletonema costatum*, a type of diatom, which he grew himself.

The young shrimp were fed on brine-shrimp eggs and clam eggs and larvae. In the final stage, they are transferred to salt-water tanks and fed on chopped trash fish.

The "kuruma" shrimp grows to a length of about 6 inches and is considered a great delicacy by the Japanese, who eat it raw or fried. In 1962, Japanese fisheries yielded about 3,000 tons of this species and about 4,000 tons were imported for Japanese consumption. (World Fishing, May 1963.)

WHALING INDUSTRY TRENDS:

Japan was reported to have completed arrangements in July 1963 to purchase two whaling factoryships, the *Thorshovdi* from Norway and the *Southern Harvester* from the United Kingdom. This would increase Japan's share of the annual Antarctic whale-catch quota, as established by the International Whaling Commission, from 41 percent to 50 percent. The International Whaling Commission, at its Fifteenth Annual Meeting in London, England, in early July 1963 had reduced the 1963/1964 (winter) whaling season catch quota by 5,000 blue-whale units to a total of 10,000 units. As a result of this action, Japan (which operated seven whale factoryships in the Antarctic whaling grounds in the 1962-1963 season) was temporarily faced with the prospect of reducing her fleet to five factoryships in order to place her whaling operations on a profitable basis. Purchase of the *Thorshovdi* and the *Southern Harvester* and the transfer of their share of the total seasonal Antarctic whale catch quota to Japan will now permit Japan to continue to operate seven fleets, one of which is expected to be used exclusively for sperm whale fishing. The *Thorshovdi* and the *Southern Harvester* are expected to be scrapped. (Suisan Keizai Shimbun, July 24, 1963, and other sources.)

Beginning in November 1963 Japan is expected to operate two fleets of whale catcher vessels from the whaling bases located at South Georgia Island (England) in the South Atlantic Ocean. They are expected to be operated by the two largest fishing companies in Japan. (Suisan Tsushin, August 2, 1963.)

The Japanese Fisheries Agency is reported to have granted, on a profit-sharing basis, to two large fishing companies a special whale-catch quota of 60 blue-whale units for the 1963 North Pacific-Bering Sea whaling season. Including the catch quota already assigned to one of the two companies, this brings the 1963 North Pacific whale catch quota assigned to that company to a total of 287 blue-whale units.

Reportedly, the Fisheries Agency granted the special quota of 60 blue-whale units to the two companies to compensate them for losses they had incurred in preparing for experimental king crab pot fishing in the Gulf of Alaska in 1963. The two companies had intended to use jointly a mothership accompanied by a fleet of catcher vessels for the Gulf of Alaska king crab operation, which initially had been informally approved by

the Agency. Accordingly, they had proceeded to make extensive preparations but, as a result of protests registered by the United States, the Fisheries Agency ultimately postponed approving the project in 1963. Both companies are reported to have spent a total of about 120 million yen (US\$333,000) in preparing for the cancelled Gulf of Alaska king crab operation. (Suisan Tsushin, August 2, 1963, and other sources.)

The Japan Whale Oil Joint Sales Company (composed of six whaling companies) is reported to have concluded an agreement to sell 5,000 metric tons of baleen whale oil to an independent European fat-and-oil producer. The sale was reported to have been concluded at a c.i.f. price of 78 pounds 1 shilling (US\$218) a metric ton.

In Japan, sperm whale oil is reported to have been sold on the domestic market for 80,000 yen (US\$222) a metric ton. (Suisan Keizai Shimbun, July 30, 1963.)

PURCHASE OF BRITISH WHALING MOTHERSHIP STIRS CONTROVERSY:

The purchase of the British whaling mothership *Southern Harvester* by one of the 3 Japanese fishing companies engaged in whaling has been of growing concern to the other 2 whaling firms, according to an article published in the July 15, 1963, issue of *Nihon Keizai*, Japan's authoritative economic daily. During the 1962/63 whaling season, the 3 Japanese companies had 7 fleets operating in the Antarctic.

The article stated that in order to cope with the reduction in the whale-catch quota for the 18th Antarctic whaling season, moves for the reorganization of whaling fleets to take part in the program were becoming active in Japanese fisheries circles. It was reported by influential sources that the Japanese Fisheries Company in late July initialled an agreement for the purchase of a whaling mothership, the *Southern Harvester*, from a South Georgia company, an affiliate of a large British whaling firm. Included in the purchase is the 5 percent catch-quota rights (the quota for the 18th whaling season is 500 whales in terms of sulfur bottoms). The purchasing Japanese company is also reported to have concluded a one-year lease contract at the same time for the use of the British firm's whaling base on British-owned South Georgia Island south of Argentina. The reasons given for the Japanese company's deciding on the purchase of the British mothership were to: (1) be in a position to operate the vessels it now owns (refrigerated factoryships, carriers, and catcher boats) at their maximum; (2) obtain raw materials for canning whale meat and production of meat (hams and sausages), which constitute an important part of the company's domestic marketing business; and (3) fit into the company's long-

Japan (Contd.):

range prospects that whaling will become commercially profitable because of price increases for whale meat on the domestic market, and the higher price of whale oil on the international market. The whale oil price is already double the 1962 price because of very light supplies. The article pointed out that there would likely be some disagreement between the other two whaling companies in which the Japanese Government would also figure because of a reorganization study toward cutting down the whaling fleets.

The Southern Harvester is a sistership of the Southern Venturer (20,330 gross tons) which was jointly purchased by Japan's three whaling companies in conjunction with another Japanese fishing firm in June 1962. The catch quota for the vessel at the time of the purchase was 600 whales and the price paid for it was ¥2.15 billion (\$5.9 million). It was said, however, that the Southern Harvester is newer than the Southern Venturer, larger in size, and has better facilities. The vessel's actual catches in the past three years were 659.5 whales in the 15th whaling season, 605 whales in the 16th, and 502 whales in the 17th whaling season.

The article said that the other two whaling companies negotiated with the British firm to purchase both the Southern Harvester and the Venturer in 1961, but that one of the companies changed its plan and purchased the No. 3 Cosmos from Norway. Eventually, the Venturer was purchased jointly by the three whaling companies. Although the purchase price of the Southern Harvester was not known, it was expected to be about ¥1 billion (US\$2.8 million) which is considerably lower than the ¥2.8 billion (US\$7.7 million) paid for the Cosmos 3 (the catch quota at the time of purchase was 600 whales), and the ¥2.15 billion paid for the Venturer.

Japan's catch quota for the 18th whaling season is, according to the decision made by the International Whaling Commission, 4,100 whales, which is 33.4 percent less than the previous season. If seven fleets are to take part in the whaling season, the quota per fleet will be 585.7 whales, which would be far below the 800 whale quota which is considered a normal average catch per fleet. The total catch quota for the Japan Fisheries Company, combining the quota for the vessels Ton-

an-Mar and No. 2 Tonan-Mar, is 1,171.4 whales, and when the 500 whale quota allocated to the Harvester is added, the average quota per fleet will be 835.7, somewhat over that figure. The article continued that in Japanese whaling circles concerned, the example is recalled of the fishing company that purchased the Cosmos 3 which released the surplus quota to other companies. Therefore, the fishing company which is purchasing the Southern Harvester hopes to reach an understanding with the circles concerned by offering the surplus quota to the other two whaling companies, although strictly insisting on buying the vessel on its own.

The article said it was expected that the other companies will naturally oppose that plan on the strength of the agreement reached among the three whaling company presidents to cooperate with each other in the planned reorganization. It was reported that the President of 1 of the 3 fishing companies involved has worked out a joint management plan based on the principle of equality among all three companies.

According to the article, one of the companies avoided clarifying its official attitude for the time being, but it was expected that as a matter of course the company will work out effective countermeasures. The article concluded with the statement that the authorities concerned are attaching importance to the point that with the purchase of the Southern Harvester, the United Kingdom will become a nonwhaling nation, and as their stand is to avoid disagreement between Japan and the Soviet Union in the field of whaling by some means or another, they were expected to try to adjust the situation. (Fisheries Attache, United States Embassy, Tokyo, July 30, 1963.)

Note: See Commercial Fisheries Review, April 1963 p. 62.



Kuwait

SHRIMP INDUSTRY:

From 1959 through 1962 there has been a steady growth in the shrimp operations of a private commercial enterprise in Kuwait since its formation in 1959. Four up-to-date trawlers built in Florida were added to the company fleet in 1962. Two retail outlets were set up and both appeared to be doing well. But the emphasis of the company has

Kuwait (Contd.):

remained on freezing shrimp for export to the United States, Lebanon, and elsewhere. Air shipments have become more frequent and sales to Lebanon especially have been expanding. In mid-1962, the company obtained a license from Iran to fish (on a percentage basis) in Iranian waters. Plans to increase its fleet and shore plant were being readied for implementation in 1963 or 1964.

Fish in the territorial waters of Kuwait are plentiful but little had been done by the Government up to the end of 1962 to encourage exploitation on an organized and scientific basis. Thus in 1962, the Kuwait market continued to be supplied mainly by the traditional fisherman and fishing fleet.

In March 1963, Kuwait invited an FAO fisheries expert to survey its resources and to draw up a preliminary program leading to the creation of a State-sponsored fishing industry. The finding of the FAO report is probably reflected by the recent announcement of the formation of the Kuwait National Fisheries Company. Details of plans for that company have not been made public. (United States Embassy, Kuwait, July 27, 1963.)



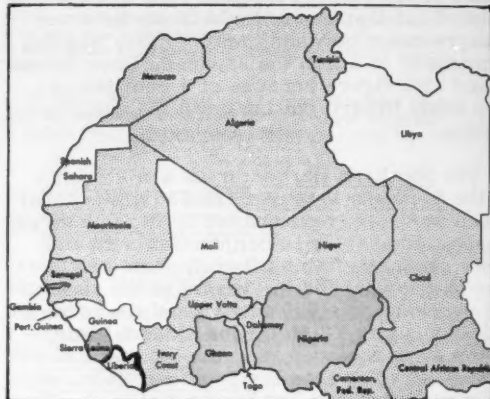
Liberia

FISHING COMPANY
EXPANDS OPERATIONS:

A Liberian fishing company started replacing its small trawlers with deep-sea fishing trawlers in the spring of 1963, in order to broaden the quality and variety of its catch. About 100 metric tons of fish were caught on the first trip of one of the vessels which are manned by professional Japanese crews and are equipped with freezing and packing facilities. The company has also hired a Norwegian commercial fisheries expert as its new manager who will supervise an expansion program which includes additional cold-storage facilities in Monrovia and new facilities in other parts of the country. It was expected that the new facilities will assure a more constant supply of fishery products in the Liberian diet at steady prices. This has not always been the case in the past. (United States Embassy, Monrovia, June 30, 1963.)

FISHING INDUSTRY TO BE REORGANIZED:

A new Liberian Bureau of Commercial Fisheries is to be set up within the Department of Agriculture and Commerce under the control of the Liberian Government's Commerce Division. Its purpose will be to regulate the Liberian fishing industry which has been unable to provide a reliable supply de-



spite its rapid growth in recent years. Periodic shortages of fishery products are accompanied by high prices. The new Bureau will regulate the fishing industry by centralizing the landing and marketing of fish. It will also control the distribution of fish from the central area to the consuming areas, control prices, and collect statistics. No official announcements have yet been made as to how the first two functions would be carried out. (United States Embassy, Monrovia, June 30, 1963.)



Malaya

JAPANESE TUNA OPERATIONS AT
PENANG TO BE EXPANDED:

The Japan National Federation of Tuna Fisheries Cooperatives (NIKKATSUREN), at a special general meeting convened on July 25, 1963, voted a 50-percent increase in capital--64 million yen (US\$178,000)--for the Overseas Fisheries Company, Ltd., to be used for expanding that company's overseas tuna enterprise at Penang, Malaya. That enterprise (a joint Japanese-Malayan firm) has a productive capacity of 500 cases of tuna a day, a quick-freezing capacity of 40 metric tons a day, and a cold-storage holding capacity of

Malaya (Contd.):



600 metric tons of frozen tuna a month. The capital increase is to be used to expand by December 1963 the present cold-storage holding capacity to 1,200 metric tons a month.



Japanese research vessel Shoyo Maru of the Japanese Fisheries Agency docked at Penang, Malaya. In 1962, this vessel searched for tuna in the vicinity of Mauritius.

Also at the July 25 meeting, NIKKATSUR-EN decided to remodel the present building occupied by the Federation into a five-story complex, including a basement. Construction is expected to start in October 1964. Details regarding the funding of the building remodeling program, estimated at 80 million yen (US\$222,000), are now being worked out. (Suisan Tsushin, July 27, 1963.)

Note: See Commercial Fisheries Review, July 1963 p. 87.



Netherlands

DISTANT-WATER FISHING BY TRAWLERS:

An annual subsidy of one million florins (US\$278,300) over a three-year period has been granted by the Netherlands Government to the owners of 10 trawlers which will fish the distant waters off Iceland, the Lofotens, and the White Sea.

The first of these trawlers left in February 1963 for the waters off Iceland. Among them were stern trawlers of the Rijmond class. The results of the first trips were not entirely satisfactory because of bad weather, but the vessel owners have decided to continue fishing.

It is reported that an Ijmuijen vessel owner plans to have built in Poland six large stern trawlers capable of operating equally well off Iceland, in the Barents Sea, and off North America. (Translated from Le Marin, June 28, 1963.)



New Caledonia

FREEZERSHIP TO SERVE AS FLOATING TUNA COLD-STORAGE PLANT:

The Japanese freezer ship Eiyo Maru (2,617 gross tons) departed Yokosuka, Japan, on July 11, 1963, for Noumea, New Caledonia, where she will be anchored and utilized as a floating cold-storage plant to receive tuna from Japanese tuna vessels based at Noumea.

The joint Japanese-French tuna base at Noumea, which was established this year with a capital of 20 million yen (US\$55,556), does not presently have cold-storage facilities. The Japanese firm involved in that enterprise estimates that it will probably take a minimum of 3 years and a maximum of 5 years before adequate cold-storage facilities are built at that port. In the interim, the Eiyo Maru, which has a capacity of rapid-freezing 50 metric tons of fish per day, producing 20 metric tons of ice per day, and holding 1,200 metric tons of frozen fish, will serve as a floating cold-storage plant. A total of 33 100-ton tuna vessels is expected to supply the freezer ship with tuna. (Nihon Suisan Shimbun, July 15, 1963.)

Note: See Commercial Fisheries Review, March 1963 pp. 64 & 67.



Peru

FISHING INDUSTRY STATUS
AS OF JULY 1963:

Fishery products, especially fish meal, constitute one of Peru's primary exports. Beginning in the second quarter, and expanding during the month of July, a critical situation appeared to be in the making. Although the full story is not yet known, the problem seems to be compounded of several elements, but to be attributed largely to the intensive debtor position of the industry (it is estimated that it owes some four billion soles or nearly \$150 million to banks, suppliers and other local and foreign creditors) and to recently instituted restrictive credit policies on the part of local banks. The ramifications of this important industry throughout the entire economic structure are extensive. Whatever happens in the industry will surely be reflected in the economy of the country as a whole.

Is there a crisis in Peru's fish-meal industry? Yes, say organizations representing workers, owners of fishing boats, boat builders, and independent fish-meal producers. No, say the National Fisheries Society, the Consorcio Pesquero del Peru (the marketing organization which represents between 70 and 85 percent of Peru's fish-meal production), Pesca (a monthly magazine devoted to the fisheries industry), and experts who have made public statements about the present situation. It is clear that the fish-meal industry is passing through a difficult period but it is doubtful that the situation has reached a critical state. Pesca, in an article entitled "Fishing in a Sea of Debts" in a recent issue, summed it up as follows:

"... the fisheries industry is not in a critical situation or anything like it. However, it certainly is passing through a bad financial moment, fundamentally as a consequence of lack of foresight..."

No trade data for the second quarter of 1963 are available, so it is not possible to give figures for fish-meal production and export. There were reports in mid-June that the Consortium had unsold stocks of about 200,000 metric tons, valued at approximately \$20 million. Normally, fish-meal producers take Consortium documents showing sales to commercial banks which discount paper. However, with unsold fish-meal and with credit restrictions announced by commercial banks early in May, many fish-meal producers were unable to obtain funds for current expenses. Therefore, the report continued, the Consortium was seeking a short-term loan from the Industrial Bank to help finance the accumulated stocks.

During the same period anchovy (anchoveta) fishing slackened, the fish virtually disappeared from their usual areas. This is generally attributed to normal seasonal phenomenon expected each year between June and September, when changes in ocean conditions drive the fish farther out from shore and to greater depths. Unlike those months in 1961 and 1962, when fish remained unusually abundant, fishing this year has dropped off 70 to 80 percent, with a resulting decline in work for fishermen, boats, and plant personnel, and an intensification of the financial problems for numerous producers. The present slack period is expected to terminate by the end of September. Then, given the production capacity of Peruvian fish-meal plants, the problems of overproduction, markets, and prices will replace existing problems. There is considerable difference of opinion within the fish-meal industry regarding Peru's adherence to the international quota system established in 1960. Certain elements, generally the larger producers, favor maintenance of prices through control of the supply, whereas smaller producers, who do not have the financial resources necessary to hold stocks, favor selling more than the quota even though at lower prices.

The "bad financial moment" of the fish-meal industry mentioned was brought to public notice in mid-July. The

Pesca article, based on a study of the industry by the staff of the periodical, called attention to the financial situation of the industry: Investment in the industry totals some \$190 million, of which \$37 million represent invested capital; the remainder represents credits from banks (\$56 million), from national and foreign suppliers supported by guarantees of various kinds (\$56 million), from national and foreign suppliers without guarantees (\$19 million), and from national financing firms whose interest rates are higher than those of commercial banks (\$19 million).

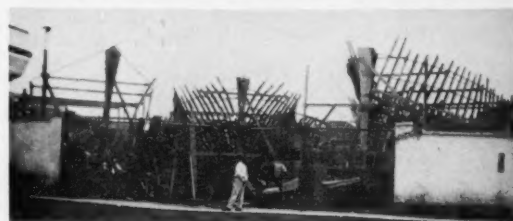
The industry finds itself in a tight financial spot at the moment, heavily in debt and without working capital, because it has generally continued, with credits, to expand existing plants or build new ones, and to buy new boats and equipment, rather than to take advantage of good production and sales by paying debts and accumulating reserves. "Pesca" believes Peru's fish-meal industry has a promising future, but that, to ensure it, measures must be adopted to restore a balance between fish-meal production and consumption, new markets must be found, production costs (which reportedly have increased from \$58-\$60 per ton to \$85-\$90 or more per ton) must be revised, credits must be used to consolidate existing enterprises, not to enlarge them, and commercial bank credit must be made more flexible.

At the end of July, most of the organizations representing fisheries activities announced the creation of a Coordinating Committee for Fisheries Activities, to examine and find solutions for the problems of the industry. The immediate task of the Committee will be:

1. To obtain medium-term and long-term financing to permit consolidation of the industry;
2. To ensure the harmonious development of the industry (i.e., to assure that financing obtained will be used to pay off debts and to consolidate the industry, not to increase production capacity); and
3. To fully support national and international fish meal quota systems. (United States Embassy, Lima, July 31, 1963.)

FISH MEAL AND OIL INDUSTRY
TRENDS, APRIL-JUNE 1963:

Peruvian fish oil and meal exports during the second quarter of 1963 were said to have been affected by production losses during February and early March 1963 when anchovy fishing was halted for 22 days by a labor dis-



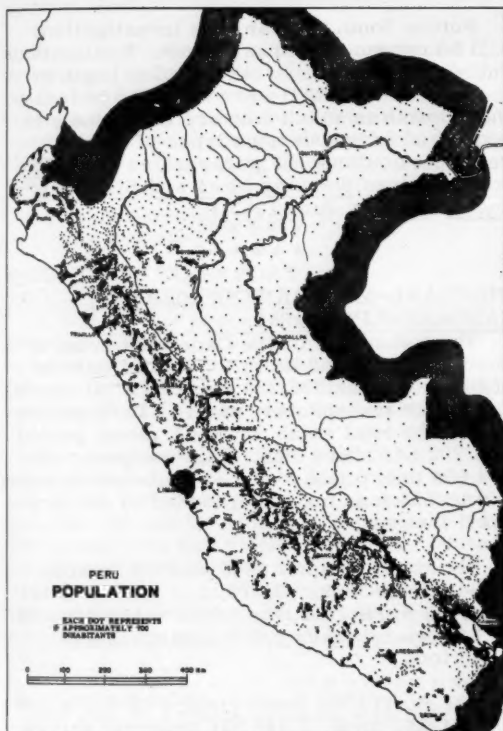
Portion of a Callao shipyard in 1962 where anchovy fishing vessels were being built.

pute. It is estimated that the lost production time will cost Peru 9 million dollars in foreign exchange in 1963. (Editor's Note: In spite of the production loss, Peruvian fish-meal production in January-May 1963 totaled 602,850 metric tons, up 30.9 percent from

Peru (Contd.):

that in the same period of the previous year, according to preliminary data.)

New fish-meal factories continue to be established in Peru. In the mid-coastal area of Peru, the Bay of Vegueta (near the port of Huacho) has been converted into a high-speed processing center. The 3 factories in that area in early July 1963 had an average fish-meal production of 40 tons per hour. Some 30 other plants are planned for the area. The region provides excellent production conditions and an abundant labor force.



As part of a project to increase fishery landings for domestic consumption, the Bay of San Jose, near Chiclayo, is to be converted into a model fishing port. (United States Embassy, Lima, July 11, 1963.)



Portugal

CANNED FISH TRENDS,
JANUARY-MAY 1963:

The Portuguese canned fish industry, one of the principal factors in its export trade, was struggling to counteract adverse publicity arising from the unfortunate exportation of certain lots of poor fish to Germany and Italy, which resulted in a shakeup in the Directorate of the Canned Fish Institute.

Table 1 - Value of Portuguese Exports of Canned Fish (in oil or sauce) to the United States, January-May 1963 with Comparisons

Product	1963		1962	
	Million escudos	Million US\$	Million escudos	Million US\$
Sardines	29.8	1.0	32.1	1.1
Anchovies	25.2	0.9	26.1	0.9
Other 1/	4.0	0.2	1.4	0.1
Total	59.0	2.1	59.6	2.1

1/Includes tuna and tuna-like pack.

Table 2 - Portuguese Canned Fish (in oil or sauce) Exports and Pack

Product	Exports			Pack		
	January-May			January-April		
	1963	1962	1961	1963	1962	1961
 (Metric Tons)					
Sardines	19,365	17,824	19,417	1,563	4,079	3,173
Anchovies	1,956	2,288	2,309	1,503	2,209	2,180
Tuna & tuna-like . .	625	575	727	481	541	258
Other	2,382	840	720	180	122	188
Total	24,328	21,527	23,173	3,727	6,951	5,799

Production of canned fish showed a sharp decline during the first quarter, presumably due to the particularly unfavorable weather conditions prevailing during that period. Exports during that period, however, showed an almost 25 percent rise from 1962. Exports of canned sardines (in oil or sauce) of 19,365 metric tons during January-May 1963 were somewhat more than the 17,824 tons exported in the same period of 1962. But the value of the canned sardine exports in 1963 was slightly less than in 1962 indicating that sardines were sold at lower prices this year.

CANNED FISH EXPORTS,
JANUARY-APRIL 1963:

Portugal's total exports of canned fish during the first 4 months of 1963 were 11.4 percent greater (in quantity) than those in the same period in 1962, due primarily to higher exports of sardines (up 6.8 percent) and a sharp increase in the exports of mackerel. The increase was partly offset by smaller shipments of anchovy fillets. Sardines accounted for 78.6 percent of the 1963 exports of canned fish.

Portugal (Contd.):

Portuguese Canned Fish Exports, January-April 1963				
Product	January-April			
	1963		1962	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	16,805	884	15,729	827
Chinchards	404	21	385	20
Mackerel	1,755	70	389	16
Tuna and tuna-like	529	17	545	18
Anchovy fillets	1,783	178	2,061	206
Others	110	6	90	4
Total	21,386	1,176	19,199	1,091

Portugal's principal canned fish buyers during January-April 1963 were Germany with 3,286 metric tons, followed by Italy with 3,070 tons, United States 2,629 tons, United Kingdom 2,372 tons, and France 1,878 tons. (*Conservas de Peixe*, June 1963.)

CANNED FISH PACK, JANUARY-APRIL 1963:

Portugal's total pack of canned fish in oil or sauce in January-April 1963 was down about 46 percent (in quantity) from that in the same period in 1962. The combined sardine and anchovy fillet pack during January-April 1963 accounted for 82 percent of the total pack. Compared with the first 4 months of 1962, the January-April 1963 pack of sardines dropped 62 percent and the anchovy

Portuguese Canned Fish Pack, January-April 1962-63				
Product	January-April			
	1963		1962	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	1,563	82	4,078	214
Chinchards	12	-	32	1
Mackerel	128	5	49	2
Tuna and tuna-like	482	16	542	19
Anchovy fillets	1,502	150	2,209	221
Others	38	2	40	2
Total	3,725	255	6,950	459

pack was down about 32 percent. During February and March 1963, a closed season for sardine fishing was in effect, and the sardine pack in April 1963 totaled only 386 metric tons as compared to 2,379 tons in April 1962.



South Africa Republic

TUNA INVESTIGATIONS OFF WEST COAST:

Four species of tuna exist in considerable numbers off the Cape west coast of the South Africa Republic and they can be caught by Japanese-type long-line gear, according to the results of a survey conducted by the exploratory fishing vessel *R. V. Kunene*. The project was initiated by the South African Director of Sea Fisheries. The survey indicated that commercial fishing might be profitable. But long-range forecasts of tuna occurrence off South Africa will require additional information.

Future South African tuna investigations will be conducted in two phases. Explorations during the first phase (expected to begin in the summer of 1963) were designed to locate those areas in which tuna are most likely to occur and to test various types of fishing gear, particularly the purse-seine net. (*The South African Shipping News and Fishing Industry Review*, June 1963.)

PILCHARD-MAASBANKER FISHERY, JANUARY-APRIL 1963:

The fish catch off the Cape west coast of South Africa Republic in the first 4 months of this year was 238,239 short tons pilchards, 7,673 tons maasbanker, and 14,634 tons mackerel. The total catch for the 4-month period was 260,546 short tons. This compares with 353,656 tons pilchards, 5,521 tons maasbanker, and 15,555 tons mackerel landed in January-April last year.

The catch in April 1963 was: pilchards 67,941, maasbanker 3,676, and mackerel 401 tons. In April 1962, the catch was: pilchards 70,043, maasbanker 1,070, and mackerel 6,348 tons.

The April 1963 catch yielded 16,694 short tons of fish meal, 1,340,951 imperial gallons of fish body oil, 4,108,192 pounds of canned pilchards, 177,294 pounds of canned maasbanker, and 69,168 pounds of canned mackerel. (*The South African Shipping News and Fishing Industry Review*, June 1963.)



South-West Africa

SOVIET TRAWLERS FISH IN INSHORE PILCHARD GROUNDS OFF COAST:

In mid-July 1963, up to 7 Soviet trawlers were active 3 to 20 miles off the coast of South-West Africa, according to newspaper reports in Capetown, South Africa. Although Soviet fishing vessels have operated off South Africa before, this was believed to be their first significant move into inshore pilchard grounds. South-West African fishermen said their livelihood was being threatened by the action of the Soviet vessels, which were reported to be close to the existing 3-mile territorial limit.

A bill providing territorial waters of 6 miles and fishing limits of 12 miles for both South-West Africa and the South Africa Republic has passed the South African parliament, but not yet been proclaimed into law. (United States Embassy, Capetown, July 16, 1963.)

FIRM PLANS TO EXPORT FROZEN PILCHARD FILLETS:

A Walvis Bay processing plant has been awarded a special 5,000-ton pilchard quota to be used for trial exports of frozen pilchard fillets. It is believed that a market has been found in West Germany for the frozen fillets.

Two new vessels will be built to catch the extra pilchard quota, according to the manager of the Walvis Bay firm. The new vessels will also be outfitted for tuna fishing. In addition, the firm has plans to enter the white fish (groundfish) field and has drawn tentative plans for the construction of a steel stern trawler. (*The South African Shipping News and Fishing Industry Review*, June 1963.)

Note: The new 5,000-ton pilchard quota is in addition to the regular 540,000-ton pilchard quota for 1963 which was divided equally among the 6 reduction and canning plants at Walvis Bay.



Spain

JAPANESE FIRM SIGNS FIVE-YEAR CONTRACT TO BUY SPANISH-CAUGHT FISH:

A Japanese fishing company has concluded a five-year contract, beginning in 1963, to purchase annually 6,000 metric tons of "mon-

ko" squid, sea bream, and octopus from a prominent fisheries company located at Las Palmas, Canary Islands (Spain). The Japanese firm plans to use the Awazu Maru (8,500 gross tons) as a floating freezership. The freezership would be anchored off Las Palmas for approximately five months (from May to October) to receive fish from about forty 150-ton Spanish trawlers operating out of Las Palmas.

Reportedly, the Japanese firm is said to have received authorization to operate the Awazu Maru within the Spanish territorial sea limit of six miles. This arrangement is said to be significant for two reasons: (1) the mothership will be buying fish from Spanish fishing vessels which can freely operate in Spanish territorial waters, which are abundant in resources; on the other hand, the waters beyond six miles are being heavily fished by Japanese trawlers and some concern is already being expressed over the condition of the stocks; and (2) the Spanish Government is reported to be considering expanding her territorial waters to a distance of 12 miles from shore.

Part of the fishery products frozen on board the Awazu Maru is expected to be exported to Europe, but the greater portion is expected to be transported to Japan towards the end of the year when domestic demand in Japan is said to be greatest. Reportedly, the importation into Japan of foreign-caught "monko" squid is restricted, but the Japanese firm is said to have received special authorization from the Japanese Government to import a fixed quantity of that species, which is highly prized in Japan as "sashimi" (raw fish).

The Japanese firm, which is reported to be operating 16 large tuna long-line vessels in the Atlantic Ocean, plans on enlarging that fleet by dispatching two more large tuna vessels of the 1,000-ton class (Hoko Maru, No. 56 and 58) to the Atlantic Ocean. In addition, the company plans to dispatch in November 1963, the mothership Ishiyama Maru (3,500 gross tons) deck-loaded with eight 20-ton portable vessels to the Atlantic tuna-fishing grounds. (Nihon Keizai Shimbun, August 2, 1963.)



U.S.S.R.

KING-CRAB FLEET LEAVES GULF OF ALASKA:

According to reports, the Soviet king-crab fleet fishing in the Gulf of Alaska in the area south of Kodiak Island had left that area as of the latter part of July 1963.

Early in July 1963, two Soviet king-crab factoryships and their accompanying fishing vessels moved from the Bering Sea into the Gulf of Alaska to a location about 30 miles south of Kodiak Island. This was the first time the Soviets had entered the commercial fishery for king crab south of the Alaska Peninsula. Soviet fishing vessels use tangle nets to fish king crabs and this type of gear handicaps United States fishermen fishing the same area with pots.

King crab is Alaska's fastest growing fishery and its year-round nature makes it particularly important to the State's economy. Alaska fishermen took a record 52 million pounds of king crab in 1962, compared with approximately 43 million pounds in 1961, 28 million pounds in 1960, 19 million pounds in 1959, and only about 1 million pounds in 1949. The combined Soviet and Japanese king-crab catch in the eastern Bering Sea in 1962 was estimated at about 50 million pounds. (*The Seattle Times*, July 22, 1963, and unpublished sources.)

FOUR FISH PROCESSING AND FREEZING VESSELS TO BE BUILT IN THE NETHERLANDS:

An order for four automatic fish processing and freezing vessels was placed recently with a Netherlands shipyard for V/O Sudoimport, Moscow, according to Dutch newspaper reports. The Soviet vessels will have a deadweight of 2,600 tons each with 3,000 horsepower engines. They are scheduled for delivery in 1965.

The same Soviet firm ordered four of the same type vessel from a Copenhagen, Denmark, shipyard early in 1962. The third Danish-built vessel in that series for the Soviets was delivered in June 1963. (United States Embassy, The Hague, July 27, 1963, and *Fishing News*, July 19, 1963.)

THIRD DANISH-BUILT FISH-FREEZING VESSEL DELIVERED:

The M/S *Davydov*, the third in a series of four fish-freezing vessels being constructed by a Copenhagen shipyard for V/O Sudoimport of Moscow, was delivered to the Soviet organization at the end of June 1963. The 2,600-ton vessel made 14 knots, loaded, on its trial trip.

The first vessel of this group was the M/S *Skryplev*, which was launched in May 1962. The second vessel, the M/S *Vitus Berling*, was delivered to its owners in January 1963. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, July 17, 1963.)



United Kingdom

TWO NEW SEMIAUTOMATED STERN TRAWLERS TO FISH IN NORTH SEA:

"*Ross Daring*:" The first of a revolutionary new class of stern trawlers was launched at a Selby, England, shipyard the latter part of May 1963. The vessel (named *Ross Daring*) is owned by a large British fishing company. It is the first attempt to create a vessel capable of gaining a better return on the capital invested in North Sea fishing. A second vessel (*Ross Delight*) of the same class was launched in August 1963.



Fig. 1 - The *Ross Daring*, the first semiautomated trawler to be built in England, was launched on May 25, 1963.

Ross Daring is not "just another" stern trawler, state the owners. The new vessel embodies numerous features which, though novel in practice, are based on the sound reasoning of vast operating experience by the owners.

Economy in operation through distinct attempts at automation, plus a more pleasant life for the fisher-

United Kingdom (Contd.):

man, has guided the planning of the Ross Daring. This hypothesis has yet to be proved but an analysis of the main points of innovation indicates a great potential. The new vessel has:

1. An entirely redesigned deck layout which allows the whole of the framework of the trawl to be taken on board with only one set of links to disconnect;
2. Facilities to enable all the catch to be gutted and washed under cover at waist level, thereby relieving fishermen of the stooping and stretching which has been their experience since trawling began;
3. A 4,800 cu.ft. fish room, giving the crew of four men ample room for working, and for stowing the fish quickly and efficiently; and
4. Remote control of sealed engine, and trawl winch, from the bridge—a further economy measure which obviates engineroom personnel and relieves a man of winch duties.

Crew requirements have been reduced to a hitherto unheard-of minimum on the premise that, if more men are required to run the vessel and handle the gear than to handle the catch, then the basic design is at fault. This is what the owners write about the vessel.

Side trawling, of course, has been standard for years. It has demanded large crews to handle the many duties on board—duties which, by imaginative and courageous planning, can be largely mechanized and simplified. In a mechanized age with automation in every activity of life, the adoption of labor-saving devices at sea is a logical and inevitable step. Ross Daring is a great advance on any trawler yet designed for service in home waters. Her many innovations and revolutionary methods of operation are entirely practical, so practical in fact, that their success is virtually assured.

Following the reasoning that the ideal length of ship for year-round operation in the North Sea is about 100 feet, with a catching capacity of around one ton a day, the Ross Daring was planned to an over-all length of 99 feet with sufficient crew to handle the catch comfortably: i.e. a skipper and four men. Once decided, this intriguing proposition required development and, as will be seen, a number of interesting problems had to be overcome in its accomplishment.

Ross Daring, the first of two similar ships, is scheduled to enter service in October, to be followed after a few months by the second of her class, the Ross Delight. Together, these revolutionary vessels represent the spearhead of a very definite effort to make the North Sea more profitable by providing owners with equipment capable of effecting real economies. The Ross Daring class of stern trawlers may well be setting the near-water standards of tomorrow.

The Basic Ship: The basic ship is of combined welded-riveted construction incorporating the shipbuilder's latest techniques in unit prefabrication and assembly. It has a bar keel, transom stern, and raked bar stem. The long raised forecastle encloses all crew accommodation, storage space, toilets, workrooms,



Fig. 2 - Launching of the Ross Delight at Selby, England, shipyard. This is the second of a new class of stern-trawlers termed "push button" trawlers.

etc., and the single tier deckhouse incorporating the bridge, is mounted amidships. Single-arm galleys are mounted at the after end of the upper deck, port, and starboard side. Each has a hargling block sheave but no foot roller. Main dimensions are length: 85'0" between perpendiculars; 89'0" reg.; 99'0" over-all. Moulded beam: 23'0"; moulded depth: 12'6"; draft aft: 11'0"; draft forward: 8'6".

The designed service speed of 10½ knots will be obtained through an all 8-cylinder type RPHCM, 4-stroke Diesel engine, which (pressure-charged and inter-cooled) develops 407 s.h.p. at 1,200 r.p.m. at a propeller speed of 300 r.p.m. The power transmission machinery consists of a CRVP Size 3 gearbox and hydraulic unit giving a 4:1 reduction; a 6'5½" diameter variable pitch propeller, and propeller shafting. Remote control of the propeller from the bridge is effected through a balanced telemotor valve actuating a servo-operated push-pull-rod down the center of the propeller shaft.

The vessel has a fuel capacity of 29 tons giving a maximum range of approximately 30 days.

Deck Lay-Out: Unlike many stern trawlers, the Ross Daring has no stern chute down to the water line. To avoid the risk of swamping the fishing deck in rough winter conditions, the gear is taken over a wide roller across the transom and the bobbins are contained on sloping trays at either side. The cod end is brought in over the starboard quarter.

The twin, port, and starboard mounted trawl winches are bridge-controlled, enabling the skipper to bring the wings up to the winches and the bobbins on to the tray. Local control is then taken over by the deck crew who have a small centrally-mounted twin-drum warping winch which is used for lifting the cod end, and other general duties.

The fish is emptied into the fish pounds on the fish deck starboard side, immediately to the rear of the forecastle. Here weed and dross are separated and the fish is passed into the gutting and washing house where the provision of waist-high troughs eliminates the traditional stooping and stretching. From there, after processing, it is passed forward down a chute to the fish room where it is stored on ice in the traditional manner. Fish unloading is through a large trunked hatch from the fish room opening on to the forecastle deck forward of wheelhouse.

United Kingdom (Contd.):

Winch Equipment: All winches are hydraulically-operated and have been specially developed for the Ross Daring.

The trawl winches, mounted one either side of the vessel and remotely controlled from the bridge, posed a number of problems, among which, the drum speed synchronization (so critical when the fluctuating hauling strains on individual drums have a severe retarding effect) was foremost. In effect, the hydraulic drive is so arranged that excessive strain on either winch automatically slows down the other. Each winch can take up to 400 fathoms of $2\frac{1}{2}$ " circular warp on 42" o.d. barrel and has automatic guiding-on gear.

Another problem created by remote control was the actuation of clutches and brakes. This has been overcome through a separate hydraulic system which, for the brakes, can be preset at the bridge according to the braking power required. Clutch actuation is a straightforward "in-out" control, multitooth clutches being chosen in preference to dog clutches for their more positive characteristics.

The twin-drum warping winch is also hydraulically-operated and fitted with integral controls.

Power for all hydraulic services is provided by a 6-cylinder-type Diesel engine giving 87 b.h.p. at 1,800 r.p.m. and driving a hydraulic pump. The complete engine and pump unit is mounted on a bedplate which also serves as a supply tank for the hydraulic system.

Bridge Controls: The nerve-center of any vessel is the bridge. On the Ross Daring this is particularly so, and every fishing operation, complete control of engine, propeller, pumps, and gearbox clutch can be achieved at the touch of a button by the skipper through specially-designed equipment.

The employment of a sealed engineroom with no maintenance staff has necessitated an extremely accurate control system. This has been designed and manufactured by a Colchester engineering firm.

From a relatively small console, set crosswise on the starboard side to allow the skipper maximum fore and aft vision, the following can be controlled: start-stop main propulsion engine; trawl winch engine; two general service, fuel oil transfer and slushwell pumps; engine speed; variable pitch propeller and gearbox clutch.

Integral control of the engine speed and propeller pitch is by a single lever. This is made possible by the 16-step, rail-traction-type governor fitted to the engine embodying a load control valve which, in turn, actuates a propeller pitch controller. Movement of the single lever causes a simultaneous change in engine speed and propeller pitch--the correct and automatic interrelation of both preventing overloading of the engine.

The control console is equipped with a comprehensive system of telltale lights which enable at-a-glance perception of all main mechanical functions. Red lights indicate low oil pressure on main engine, auxiliary engine and gear box, and high cooling water temperature at main engine. They also show when the

main and auxiliary engine is not running. Green lights indicate that the main and auxiliary engines, slushwell, fuel oil transfer, and general service pumps are running. An amber light which cuts out when the main engine is running indicates that its lubricating oil priming pump is functioning correctly.

Other fittings incorporated in the console are a main engine r.p.m. indicator; sequence re-set buttons for the main and auxiliary engines, and circuit test buttons for the malfunction indicators.

A separate console for trawl winch control is located on the bridge at the rear of the wheelhouse, easy to hand and in such a position as to allow the skipper full view of the fish deck while giving him equal access to the main console.

Accommodation: A single berth cabin for the skipper is situated on the forecastle deck, port side. Opening on to a landing, it permits easy access to the bridge above by means of a steel ladder. Immediately adjacent is the four-berth crew's cabin. All berths are fitted with spring interior mattresses and the necessary storage furniture.

Natural ventilation and space heating by hot-water radiators are provided in wheelhouse, skipper's cabin, crew's cabin, galley, messroom, and drying room.

Toilet facilities, jointly shared by skipper and crew, include a shower, toilet, and washbasin. Hot water for washing is supplied by a 3 kw. immersion heater.

Hot water for space heating is taken from the main engine cooling system when at sea. A standby 10 kw. immersion heater is fitted in the heating system for use when main engine is inoperative.

Anchor Windlass: A single gipsy hydraulic type with single cable-lifter, mounted on forecastle deck, forward, and powered by a 20-hp. electric motor, fitted underneath the fore deck. The control pedestal is conveniently to hand.

Fishroom: The fishroom, of 4,800 cu.ft. with a theoretical maximum capacity of approximately 140,000 pounds of fish, is insulated on sides and bulkheads and, overhead with insulation and wood lining.

All stanchions fixed wing bulkheads and shelf boards are of aluminium alloy. A proportion of the fish pens are close-shelved.

Galley: The combined galley-messroom is on the forecastle 'tween deck, port side. It is equipped with a "calor-gas" cooking range and stainless steel sink. A deep-freeze cabinet is provided in the forward store-room and access to it is gained through an adjoining door.

Life Saving Appliances: Two inflatable, 6-man life rafts to Ministry of Transport requirements, packed in fibreglass containers, are carried, together with one 14-ft. Class "C" work boat, stowed on the boat deck aft under a single-arm davit.

Main and Auxiliary Electric Power: Main electric power is supplied by a 20-kw. generator belt-driven from the main engine. Standby electric power is provided by a 10-kw. generator set.

United Kingdom (Contd.):

Steering Gear: Donkin-hand-hydraulic-ram-type fitted in a separate compartment and coupled direct to rudder head. Independent hydraulic steering is also fitted with lever control in wheelhouse.

Wireless and Electronic Equipment: Included are a transmitter and receiver; direction finder; talk-back equipment, and cabin receivers for crew entertainment. There are also a V.H.F. transmitter and receiver; radar equipment; and a Simrad "Skipper" sounder.

"Ross Delight." The second of a new class of stern trawlers for North Sea service follows, in all main details, the well known features of her sistership and predecessor, **Ross Daring**. **Ross Delight**, when completed in December 1963, will be operated out of Grimsby. (Press releases, May 20 and August 14, Ross Group, Grimsby, England.)

Note: See *Commercial Fisheries Review*, August 1963 p. 110.

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NEW TRAWL DEPTH TELEMETER DEVELOPED:

A new "trawl depth telemeter" has for several years been in the process of development by the British National Institute of Oceanography. Research biologists at the Institute have been seeking a device that could tell them at what depth their nets are fishing, so that they can adjust the depth to that of the plankton organisms they see on the echo-sounder. A number of difficult problems were encountered during the development period, but a satisfactory and effective enough instrument was completed and put in use about three years ago. Now, there are five of the instruments in service.

The instrument itself consists of three parts. Attached to the net is a roughly cylindrical "transmitter," 19 inches long, about 6 inches in diameter at its widest point, and weighing 28 pounds in air. The "transmitter," which is sparked by its own battery, measures the water pressure (which indicates its depth), and projects into the water a sound wave whose frequency varies according to the pressure. A hydrophone, which receives these sound waves, is trailed in the water from the side or stern of the ship on a short, lightly-armored cable. The top end of the hydrophone cable plugs into a small deck unit, where the received signal is amplified and its frequency measured. This measurement is done in a way which is very much like tuning a radio receiver. The deck unit has a dial and a loudspeaker, and when it is "off tune," a loud whistle is heard. As the knob is turned the pitch of the whistle changes, and the tuning is adjusted until the pitch of the note drops so low that it can no longer be heard. At that point the dial indicates the depth of the net.

This system has proved to be very convenient for use on research ships. For example, the scientist reads the depth of a layer of plankton from the echo-sounder, sets the depth-meter dial to that value, and then veers or hauls his towing warp until the note from the deck unit drops to a very low pitch. During that period he can attend to the winch and warp without having to watch a dial, and once the net is towing, he can hear immediately if it departs from the correct depth.

The whole device is transistorized and works from its own batteries. The "transmitter" uses ordinary 6-volt lantern batteries which last for 10 hours of continuous operation. The frequency of the sound used is about 60

kilocycles, which is about twice that used in most fishing echo-sounders.

The instrument has been named "The N.I.O. Depth Telemeter," and two models have so far been made, one with a depth range of 0 to 100 fathoms and an accuracy of 1 fathom and the second with a depth range of 0 to 300 fathoms and an accuracy of 3 fathoms. In both cases the maximum permissible distance between the transmitter and receiver is about 1,200 yards.

Early attempts to use echo-sounders with a transducer on the trawl headline and connected to the vessel by an electric cable (or a pressure-measuring device similarly mounted) made it fairly obvious that handling a long cable of that type was not practical for routine use.

In 1955, a scientist with the Woods Hole Oceanographic Institution described how he had managed to transmit depth information to the vessel using sound waves in the water instead of a cable. Subsequent development of his system by two U. S. Fish and Wildlife Service staff members began to give evidence that it might really develop into a practical system. The United States experiments, however, were not carried any further. But the British National Institute of Oceanography became interested in the principle as an answer to their problem, and started their own development work.

Early in 1962, arrangements were made with a firm to manufacture these instruments on a commercial basis but the firm later decided that it could not. The British National Institute of Oceanography hopes that it will now be made by another firm, and that the price will be less than £800 (US\$2,240). (*World Fishing*, July 1963.)

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NEW TYPE FLASHING MARINE BUOY LIGHT DEVELOPED:

A new type flashing buoy light designed primarily for guiding seine netters to their moorings, as well as for use by other craft, was exhibited for the first time at the World Fishing Exhibition held in London during May 1963. According to the British manufacturer, it has created such widespread interest that the initial demand has exceeded the firm's original estimate of the demand.

The special features of the buoy light have been patented because it is the first of its type to switch on automatically at dusk and switch off at dawn. This is controlled by a light-sensing cell. It is reported to be an entirely new invention, and that nothing similar was previously available. It is made of brass, and the case and assembly are waterproof and shockproof to the extent that the light continues to operate when the case is submerged. There are no moving parts. The electrical wiring is in the modern printed circuit form and a transistorized system controls the flashing light, the timing of which may be regulated during manufacture to customers' requirements. The flasher mechanism can be omitted if a continuous light is needed.

The buoy light is easily fitted to the buoy pole which passes through a hollow tube welded to the buoy light and is locked in position by a knurl-headed screw. Weighing only 3-1/2 pounds, the buoy light body is 12 inches long by 2 inches in diameter and contains 3 small hand-torch batteries which can operate the flashing light for up to 5-6 nights. The light is visible from up to 3 to 4 miles distance depending on the viewing height, as the glass dome contains a small lens producing a narrow intensive beam upwards.

The buoy light is described as not only a practical aid to seine netters and for line fishermen as a means by which

United Kingdom (Contd.):



The smaller of two versions of a new flashing marine buoy light developed in Great Britain.

their lines are quickly found, but also helpful to pleasure craft in picking out their positions by its light. Trawler owners are also using them in quantity for marker buoys from which to plot their trawling sweeps. Generally, buoy lights carried by trawlers have a radar reflector fitted for observation by the vessel's radar equipment, and the light insures that the buoy is recovered quickly as the reflector signal often becomes obscured by sea clutter when the vessel is still some distance away.

An illustration of the sound construction of the buoy light and also of another interesting application is its use by geophysical survey teams carrying out seismographic research at sea in the search for oil. They are fitted to the buoys to show the location of the wires attached to the explosive charges in or on the sea beds.

For vessels requiring a more powerful light, another type of buoy light is being manufactured by the British firm. With the body lengthened to 15 inches to hold 5 batteries, the output is increased to 2 kilowatts producing a light that is visible from up to 4 to 5 miles but the life of the batteries is reduced to last approximately three nights. The weight increases to about 4 pounds. The smaller buoy light is priced at £8 (about US\$22.40) and the larger unit £8 10s. (\$23.80). There is an extra charge for adding the radar reflector.

During the World Fishing Exhibition a large number of orders for it were received by the manufacturer. The firm reported that shipments were being made to France, South Africa, and Greece, and that their agents in about a dozen other countries would be supplied with the device so as to meet the demand there.



NEW SAMPLER TO SKIM OCEAN TOP INVENTED BY NEW ZEALANDER

According to a New Zealand release in mid-1963, the surface of the ocean can now be investigated with the assistance of an ocean surface sampler invented by R. P. Willis, technical officer of the New Zealand Oceanographic Institute of the Department of Scientific and Industrial Research. The sampler will enable that Department to obtain specimens that live only the first centimeter of the sea.

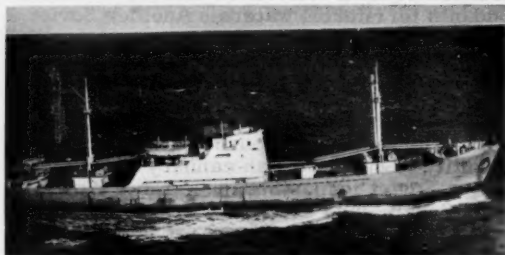
The device is a nylon net with a simple bridle attached to a pair of catamaran-like floats. Buoyancy is adjusted to obtain an average sample depth of one centimeter. The sampler was first tested from the Institute's launch on Wellington Harbour and necessary adjustments were made to the bridle length and lower spar angle.

Initial sampling from a vessel in open water was carried out during an institute cruise over the Chatham Rise. In the initial and subsequent samplings a wide variety of surface layer materials have been obtained, components of the normal "surface" animal and plant plankton, fragments of seaweeds, barnacles, and shells have been taken. (National Oceanographic Data Center Newsletter, July 31, 1963.)

Foreign Fisheries Briefs

EASTERN NORTH PACIFIC AND BERING SEA FISHING, FIRST HALF 1963:

Soviet Activities: VESSELS: Soviet fishing in the eastern North Pacific and Bering Sea involves close to 200 vessels, mostly operating in the Gulf of Alaska. Since March 1963, the Soviet fleet operating in the Gulf of Alaska has been growing steadily. In late March it numbered 35 to 40 vessels, in April 100 vessels, in May 140 to 160 vessels, and in June and July 160 vessels. Last year the greatest fleet strength reported in that area was approximately 70 vessels in late June and early July. Aside from the increased Soviet fishing effort in the Gulf of Alaska in 1963 as compared with 1962 and previous years, the most important development in Soviet fishing activities in the Gulf has been a move into the king crab fishery. Early in June 1963, one 15,000-ton crab factoryship was reported about 30 miles southwest of Kodiak Island in the Gulf of Alaska. By early July, a second crab factoryship had moved from the crab fishing grounds off Port Moller in the Bering Sea to the area off Kodiak Island. These factoryships are each served by two SRT trawlers which set the tangle nets. The nets are later picked by the 12 picker boats that are carried in davits on each factoryship. By mid-July, the Soviet king crab fleets had departed from the area south of Kodiak Island. It was determined that they had joined the saury fishing fleets off the Kuril Islands north of Japan.



A large Russian transport vessel under way in the Bering Sea.

A Soviet whaling fleet of 2 factoryships and 20 to 25 whale killers has been operating along the Aleutian Island chain and southeast of Kodiak Island.

SPECIES TAKEN: In the Gulf of Alaska the Soviets were again trawling primarily for Pacific ocean perch as they did in 1962. Some herring, Alaska pollock, cod, and sablefish have also been reported in Soviet catches. This year king crab were also being fished in the Gulf of Alaska and catches were reported to be good.

In the Bering Sea, catches include herring, flounders and soles, cod, Alaska pollock, king crab, and perhaps some shrimp.

Japanese Activities: VESSELS: In late April 1963, the Japanese fleet strength in the eastern North Pacific Ocean and Bering Sea was estimated at 40 to 50 vessels. At the end of May this number had increased to about 160, and in June to about 180 vessels. July reports showed that this fleet numbered approximately 210 to 215 vessels. This includes whaling craft but does not include the salmon craft operating in the western Aleutian area. The latter vessels include 11 factoryships and nearly 300 catcher boats. In 1963 the Japanese effort generally followed the same pattern of the past several years, but with some reduction in fleet strength from 1962 levels.

The most significant development in the Japanese fisheries of the eastern Bering Sea was the entry into the halibut fishery in early May. About May 9, when the halibut season south of the Alaska Peninsula opened, the Japanese entry into the eastern Bering Sea halibut fishery had been approved. The Japanese long-line fleet began to operate along the 100-fathom curve from Unimak Pass to the Pribilof Islands, an area fished previously for halibut only by about 100 American and Canadian boats. The Japanese long-line fleet fishing this so-called "triangle area" numbered 6 factoryships and 75 trawlers.

In July 1963, the Japanese shrimp fleet in the eastern Bering Sea consisted of 2 factoryships and 26 trawlers operating north of the Pribilof Islands. Two king crab factoryships, with 4 trawlers and 16 picker boats, have been operating in the eastern Bering Sea in an area centered in the Port Moller region. Fish meal and oil operations have been curtailed to one mothership with 30 trawlers, compared with the 4 motherships and 100 trawlers that operated in Bristol Bay in 1962. Fish meal operations have been localized in the area north and east of Unimak Pass.

During May and June 1963, three Japanese whaling factoryships, each accompanied by several killer vessels, operated in the Gulf of Alaska south of the Kenai Peninsula (about 59° N. latitude and 149° W. longitude). A fourth whaling fleet was reported operating at the far end of the Aleutian Islands. Early in July the Japanese whaling fleets in the Gulf of Alaska (off the Kenai Peninsula) had moved south and were operating off Cape Ommaney, on Baranof Island in Southeastern Alaska. This constitutes the farthest penetration south and east of any Japanese whaling fleet to date.

As of July 1963, Japan had not conducted large-scale operations in the Gulf of Alaska. In 1962, one Japanese freezer vessel, accompanied by two purse seiners and two gill netters, fished for herring in the Kodiak area. So far, in 1963, no Japanese herring fishing has been reported in the Gulf of Alaska, perhaps as a result of the seizure of two vessels in Shelikof Straits by the State of Alaska in 1962.

Foreign Fishing Fleets in Eastern Bering Sea and North Pacific As of July 10, 1963

Eastern Bering Sea:

Soviet--about 40 vessels consisting of:

- 20 trawlers and crab-picker boats
- 12 whale killers
- 1 crab factoryship
- 1 whale factoryship
- 6 support vessels (tugs, tankers, cargo vessels)

Japanese--about 175 to 180 vessels consisting of:

- 155 trawlers (shrimp, crab, longline)
- 9 factoryships (shrimp, crab, fish meal)
- 15 support vessels (tugs, tankers, cargo vessels)

Eastern North Pacific:

Soviet--about 160 vessels consisting of:

- 120 large and medium trawlers
- 12 stern trawlers
- 12 whale killers
- 2 crab factoryships
- 1 whale factoryship
- 13 support vessels

Japanese--about 40 vessels consisting of:

- 6 "exploratory" fishing trawlers
- 30 whale killers
- 3 whale factoryships
- 1 support vessel (cargo)

U. S. DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Sep. No. 688

Foreign Fisheries Briefs (Contd.):

SPECIES TAKEN: The major species of bottomfish, excluding halibut, taken in the Bering Sea and utilized by the fish meal fleet were soles and flounders, Alaska pollock, and Pacific ocean perch. Although those species were taken by the fish meal factoryship fleet, the catch was sorted out and fish suitable for human consumption was prepared for market primarily in the form of fillets. Other species of fish and shellfish taken by the Japanese in the Bering Sea include sablefish, cod, shrimp, and king crab.

A small fleet of six Japanese "exploratory" fishing vessels operating in the Gulf of Alaska in 1963 has taken sablefish and Pacific ocean perch, and halibut amounting to generally less than one percent by weight of the total catch. Some good catches of shrimp were also reported. In April 1963, reports were received that the Japanese Government had licensed a king crab mothership operation to commence "experimental fishing" in May with crab pots south of the Alaska Peninsula. The catch limit was set at 400 metric tons (882,000 pounds). After considerable discussion between representatives of the United States and Japanese Governments in both Washington and Tokyo, the Japanese Government on July 10 deferred issuance of the license pending further discussions at the September 1963 North Pacific Fisheries Commission meeting. In effect, king crab operations in that area will not be conducted by the Japanese this year.

The Japanese have been taking whales in the Gulf of Alaska, off the far end of the Aleutian Islands, and more recently off Southeastern Alaska.

FISHERIES TRAINING FOR GHANAISANS IN SOVIET UNION:

The Ghanaian Government has selected 91 men for training in the Soviet Union as "officer cadets" in the Ghana Fishing Corporation, a state-owned enterprise. The men were to be available by the end of July 1963. In December 1962, an announcement was made that the Soviet Union would award 180 scholarships for training of Ghanaians in fishing techniques. (U. S. Embassy, Accra, July 28, 1963.)

CONSTRUCTION OF COLD-STORAGE PLANT AT ABIDJAN:

A decree was signed by the Ivory Coast Government in March 1963 approving the statutes of the Societe de Construction et d'Exploitation du Frigorifique (cold storage) du Port d'Abidjan (SOCEF).

The Society is charged with the construction of, or contracting for, installations needed for the expansion of the Port of Abidjan, to promote the establishment of fish and auxiliary industries, and the organization of maritime, rail, and road transportation for fish and fish products, in response to the needs for internal consumption and for export. It is capitalized at 100 million francs (US\$20.4 million).

For this purpose, the Administrative Council of SOCEF has opened bids for the

construction of the entrepot (cold-storage plant) from plans submitted by the Societe d'Equipement de la Cote d'Ivoire. (Translated from *Le Marin*, June 28, 1963.)

TAIWANESE FISHING VESSELS WILL USE SOUTH AFRICAN PORTS:

Ten Taiwanese fishing vessels have been granted permission to use the port of Durban, South Africa, on a one-year trial basis. The Taiwan Provincial Fishery Bureau has adopted a plan to expand Taiwan's fishing operations in distant waters and has therefore begun to obtain permission for the use of foreign ports. (U. S. Embassy, Taipei, July 13, 1963.)

SOVIET FISHERIES AID TO SUDAN:

A group of Soviet fisheries specialists arrived in Port Sudan in late June 1963 aboard a Soviet research vessel to study the commercial fishery resources of the Red Sea in Sudan's territorial waters. Another Soviet team is expected to conduct research on the commercial fishery resources of the Nile River.

The Sudanese hope that these studies will reveal large local resources sufficient in quantity to supply a fish cannery to be built with a Soviet loan. (Sudanese News Agency, Port Sudan, June 26, 1963.)

SOVIET FISHING OFF WEST AFRICA:

Soviet fishermen from Batumi, on the Black Sea, are experiencing excellent fishing in the eastern Atlantic Ocean off Walvis Bay, South-West Africa. The trawl catches are used in the production of frozen fishery products and fish meal, of which a large part is shipped back to Black Sea ports in the Soviet Union. (Unpublished sources.)

SOVIET TUNA FLEET FISHING OFF SPAIN:

A Soviet tuna fleet was reported in early July fishing 40 miles off the coast of Huelva, Spain, near the entrance to the Mediterranean Sea. The fleet was said to be using electric shocking gear to stun the fish. Spanish fishing circles were reported concerned that the operation might decrease the tuna resource off the Spanish Mediterranean coast. (U. S. Embassy, Madrid, July 12, 1963.)

SOVIET FISHING IN RED SEA:

Soviet exploratory fishing has yielded commercial quantities of fish in Bab al Mandab, the strait connecting the Red Sea and the Gulf of Aden. A fleet of trawlers and seiners has

Foreign Fisheries Briefs (Contd.):

been dispatched from Kerch, a Black Sea port, to fish for sardines and mackerel on the newly discovered fishing grounds. (Unpublished sources.)

SOVIET CRAB FACTORYSHIPS CANNING SAURY IN NORTH PACIFIC:

Three crab factoryships and their accompanying trawlers had completed king crab fishing in Bristol Bay and had joined the saury (mackerel pike) fishing fleets off the Kuril Islands, north of Japan, according to a July 23, 1963, news item in a Soviet newspaper. The article did not mention that two of the factoryships had operated in the Gulf of Alaska. (Krasnoe Znamia, Vladivostok, July 23, 1963.)

FISHERY RESEARCH BY SOVIET SUBMARINE:

The Severyanka, a Soviet fishery research submarine, returned to Murmansk in mid-1963 after a voyage of 17,000 miles. Scientists aboard the vessel studied the behavior

of schools of fish in relation to fishing trawls. (Unpublished sources.)

SOVIET STUDY OF CRAB RESOURCES OF OKHOTSK SEA:

Soviet scientists are studying the crab resources of the Okhotsk Sea along the western coast of the Kamchatka Peninsula. According to a recent Soviet announcement, this is the world's most important crab fishing area. The Soviets claim that studies of crab larvae will be done for the first time by skin divers. (Unpublished sources.)

SOVIET FISHERY LANDINGS UP IN FIRST HALF OF 1963:

The Soviet catch of fish and shellfish, including whales, amounted to 2.5 million metric tons in the first half of 1963. This was an increase of 8 percent over the catch in the same period of 1962. (Pravda, July 19, 1963.)

Notes: (1) These briefs were abstracted and compiled by the U. S. Bureau of Commercial Fisheries, Branch of Foreign Fisheries and Trade.

(2) See Commercial Fisheries Review, August 1963 p. 112.



CORRECTION

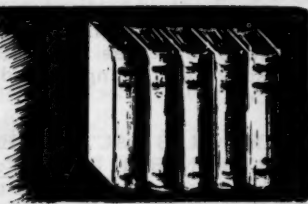
On page 112 of the August 1963 issue, an error was made. The item titled "Soviet Trawler off California Coast" should have read: "SOVIET TRAWLER OFF VANCOUVER ISLAND COAST: A 150-foot Soviet trawler was reported off the northern coast of Vancouver Island on June 15, 1963. The vessel's gear was described as 'similar to that used for fishing shrimp.'"

COMPRESSED AIR USED IN TAKING EGGS FROM FISH

The Eagle Creek National Fish Hatchery, Oregon, in mid-1963 began experimental steel-head spawn-taking with compressed air, a method which has proved successful at the Washington game department hatchery at Skamania. Initial spawning operations at the Eagle Creek Station appeared to be satisfactory. A complete report was planned on the method at the close of the egg-taking season.



FEDERAL ACTIONS



Department of Commerce

AREA REDEVELOPMENT ADMINISTRATION

PUBLIC FACILITIES GRANT AND LOAN TO PORT OF NEWPORT, OREGON, APPROVED:

A total of \$264,000 for improvements to the Port of Newport, Oregon, was approved in July 1963, by the Area Redevelopment Administration (ARA). The money will be used to provide a cold-storage plant, vessel loading and mooring facilities, and a parking lot. It is estimated that 44 new jobs will be created by the expanded fish-processing facilities and increased vessel traffic developed by the project. The ARA funds include a loan of \$85,000 repayable in 30 years with an annual interest rate of 3.5 percent, and a public facilities grant of \$179,000.



Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

WEIGHING PACKAGED FISH FILLETS AT TIME OF SALE APPROVED:

To provide for the "interstate shipment of wrapped fish fillets intended to be weighed at time of sale (or before being placed on sale)," an order has been issued amending the Food, Drug, and Cosmetic Act, section "1.13 Food; exemptions from labeling requirements." The order was signed on July 22, 1963, by the Commissioner, U. S. Food and Drug Administration. The amendment thus approves the industry practice of shipping unweighed cello-wrapped fillets in interstate commerce and having the product weighed at the point of sale.

In a statement of general policy or interpretation, the Food and Drug Administration had previously ruled (Federal Register, De-

cember 4, 1962) that food in packaged form (including fish fillets wrapped in cellophane or similar film at the production level) must bear a new weight statement on the wrapper when shipped in interstate commerce.

Since April 25, 1940, the producers of individually-wrapped frozen fish products have enjoyed an exemption from marking the net weight on wrapped fish packed in 5, 10, and 20-pound cartons at the time of packing.

On April 4, 1963 (Federal Register, April 10, 1963), the Food and Drug Administration announced a proposal to continue the exemption from the net-weight labeling law for wrapped fish fillets of nonuniform weight intended to be weighed at time of sale.

The amending order, which applies only to wrapped fish fillets of nonuniform weight intended to be weighed at time of sale, was published in the Federal Register on July 27, 1963, and became effective on publication. The order as published follows:

Title 21—FOOD AND DRUGS

Chapter I—Food and Drug Administration, Department of Health, Education, and Welfare

SUBCHAPTER A—GENERAL

PART 1—REGULATIONS FOR THE ENFORCEMENT OF THE FEDERAL FOOD, DRUG, AND COSMETIC ACT

Food; Exemptions From Labeling Requirements

In the FEDERAL REGISTER of April 10, 1963 (28 F.R. 3488), the Commissioner of Food and Drugs proposed an amendment to § 1.13 Food; exemptions from labeling requirements to provide for the interstate shipment of wrapped fish fillets intended to be weighed at the time of sale (or before being placed on sale).

Thirty days were announced for submitting views and comments on this proposal, and of 43 such comments received 39 were generally in favor and four were opposed. The Commissioner concludes that the objections based on the difficulty to the retailer in determining a correct tare weight to allow for the wrapper,

were well taken, and that the order should provide a clear-cut means whereby the retailer is informed of the average weight of the particular wrappers used by the packer. This could be accomplished by requiring that such average tare weight be clearly marked on each wrapper.

Proponents of the proposal have maintained that the majority of the 5- and 10-pound packages of such wrapped filets are not sold to retailers, but instead are marketed to institutional users where the total net weight of the contents of the package serves to comply with the terms of the statute. They maintain, therefore, that to require accurate weighing of each package at the time it is received would add unnecessary expense, and further, would reduce the quality of the product, since, to achieve a set weight, it would be necessary to use pieces of filets. It appears unreasonable to impose a requirement which, for the major portion of the output of the product, would serve no useful purpose. It is reasonable to believe that any retailers who do not care to weigh the individual units before or at the time of sale would make arrangements to purchase preweighed units.

Upon consideration of all the views and comments and other relevant information, the Commissioner, pursuant to the

provisions of the Federal Food, Drug, and Cosmetic Act (secs. 403(e) (2), 405, 701(a), 52 Stat. 1046 as amended, 1049, 1055; 21 U.S.C. 343(e) (2), 345, 371(a)), authority vested in him by the Secretary of Health, Education, and Welfare (25 F.R. 8625), concludes that the following amendment to the regulations should issue by adding to § 1.13 the following new paragraph (g):

§ 1.13 Food; exemptions from labeling requirements.

(g) (1) Wrapped fish filets of non-uniform weight intended to be unpacked and marked with the correct weight at the point of retail sale in an establishment other than that where originally packed shall be exempt from the requirement of section 403(e) (2) of the act during introduction and movement in interstate commerce and while held for sale prior to weighing and marking, *Provided, That:*

- (i) The outside container bears a label declaration of the total net weight; and
- (ii) The individual packages bear a conspicuous statement "To be weighed at time of sale" and a correct statement setting forth the weight of the wrapper; and

Provided further, That it is the practice of the retail establishment to weigh and mark the individual packages with a correct net-weight statement prior to or at the point of retail sale. A statement of the weight of the wrapper shall be set forth so as to be readily read and understood, using such term as "wrapper tare _____ ounce," the blank being filled in with the correct average weight of the wrapper used.

(2) The act of delivering the wrapped fish filets during the retail sale without the correct net-weight statement shall be deemed an act which results in the product's being misbranded while held for sale. Nothing in the foregoing shall be construed as requiring net-weight statements for wrapped fish filets delivered into institutional trade provided the outside container bears the required information.

Effective date. This order shall become effective upon publication in the **FEDERAL REGISTER.**

(Secs. 403(e) (2), 405, 701(a), 52 Stat. 1046 as amended, 1049, 1055; 21 U.S.C. 343(e) (2), 345, 371(a))

Dated: July 22, 1963.

GEO. P. LARRICK,
Commissioner of Food and Drugs.

Note: See *Commercial Fisheries Review*, May 1963 p. 90; February 1963 p. 91.



Department of the Interior

FISH AND WILDLIFE SERVICE

BUREAU OF COMMERCIAL FISHERIES

PROPOSED AMENDMENT TO FEDERAL STANDARDS FOR GRADES OF FROZEN RAW BREADED FISH PORTIONS:

A proposed amendment to existing regulations on United States standards for grades of frozen raw breaded fish portions was announced in a "Notice of Proposed Rule Making," published in the *Federal Register*, August 16, 1963. The regulations will be amended by the addition of a new Part 266 to supersede the regulations promulgated in the *Federal Register* of September 1, 1960, which have been in effect since March 30, 1960.

The proposed amendment includes product and grade description, styles and labeling requirements for styles of frozen raw breaded fish portions, grade determination, definitions, and tolerances of certification of officially drawn samples. Sections of Part 266 dealing with styles and labeling requirements are new and are not included in the standards now in effect. There are certain significant changes from the previous regulations.

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[50 CFR Part 266]

FROZEN RAW BREADED FISH PORTIONS

Proposed U.S. Standards for Grades

Notice is hereby given that pursuant to the authority vested in the Secretary of the Interior by section 6(a) of the Fish and Wildlife Act of August 8, 1956 (16 U.S.C. 742e), it is proposed to amend Title 50 Code of Federal Regulations by the addition of a new Part 266. The purpose of this amendment is to issue standards for grades of frozen raw breaded fish portions in accordance with the authority contained in Title II of the Agricultural Marketing Act of August 14, 1946, as amended (7 U.S.C. 1621-1627). These regulations, if made effective, will be an amendment to Part 266—U.S. Standards for Grades of Frozen Raw Breaded Fish Portions previously promulgated in the *FEDERAL REGISTER*, September 1, 1960, pages 8452 to 8454.

It is the policy of the Department of the Interior whenever practicable, to afford the public an opportunity to participate in the rule making process. Accordingly, interested persons may submit written comments, suggestions or amendments with respect to the proposed amendment to the Director, Bureau of Commercial Fisheries, U.S. Fish and Wildlife Service, Washington 25, D.C.

within 30 days of the date of publication of this notice in the FEDERAL REGISTER.

FRANK P. BRIGGS,
Assistant Secretary of the Interior.
AUGUST 12, 1963.

Second Issue: These standards will supersede the standards which have been in effect since March 23, 1960.

PART 266—UNITED STATES STANDARDS FOR GRADES OF FROZEN RAW BREADED FISH PORTIONS¹

266.1	Description of the product.
266.2	Styles of frozen raw breaded fish portions.
266.3	Grades of frozen raw breaded fish portions.
266.5	Labeling requirements for styles of frozen raw breaded fish portions.
266.11	Determination of the grade.
266.21	Definitions.
266.25	Tolerances for certification of officially drawn samples.

§ 266.1 Description of the product.

Frozen raw breaded portions are clean, wholesome, rectangular-shaped unglazed masses of cohering pieces (not ground) of fish flesh coated with breading. The portions are cut from frozen fish blocks; are coated with a suitable, wholesome batter and breading; and are packaged and frozen in accordance with good commercial practice. They are maintained at temperatures necessary for the preservation of the product. Frozen raw breaded fish portions weigh more than 1½ ounces, and are at least ¾-inch thick. Frozen raw breaded fish portions contain not less than 75 percent, by weight, of fish flesh. All portions in an individual package are prepared from the flesh of one species of fish.

§ 266.2 Styles of frozen raw breaded fish portions.

(a) *Style I—Skinless portions.* Portions prepared from fish blocks which have been made with skinless filets.

(b) *Style II—Skin-on-portion.* Portions prepared from fish blocks which have been made with demonstrably acceptable skin-on filets.

§ 266.3 Grades of frozen raw breaded fish portions.

(a) "U.S. Grade A" is the quality of frozen raw breaded fish portions that (1) possess good flavor and odor and (2) rate a total score of not less than 85 points for those factors of quality that are rated in accordance with the scoring system outlined in this part.

(b) "U.S. Grade B" is the quality of frozen raw breaded fish portions that (1) possess at least reasonably good flavor and odor and (2) rate a total score of not less than 70 points for those factors of quality that are rated in accordance with the scoring system outlined in this part.

(c) "Substandard" is the quality of frozen raw breaded portions that meet the requirements of § 266.1, Description of Product, but otherwise fail to meet the requirements of "U.S. Grade B".

¹ Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug and Cosmetic Act.

§ 266.5 Labeling requirements for styles of frozen raw breaded fish portions.

(a) Section 260.86 (a) (b) and (c) of Part 260 states the requirements for the use of approved grade marks, inspection marks and combined grade and inspection marks on processed fishery products.

(b) When an approved inspection mark is used on either style (§ 266.2) of frozen raw breaded fish portions, the style shall be conspicuously revealed on the label as follows:

- (1) *Style I.* "Made from skinless filets".
- (2) *Style II.* "Made from skin-on filets".

§ 266.11 Determination of the grade.

The grade is determined by examining the product in the frozen and cooked states and is evaluated in accordance with the following factors:

(a) *Factors rated by score points.* Points are deducted for variations in the quality of each factor in accordance with the schedule in table 1. The total points deducted is subtracted from 100 to obtain the score. The maximum score is 100; the minimum score is 0.

(b) *Factors not rated by score points.* The factor of "flavor and odor" is evaluated organoleptically by smelling and tasting, after the product has been cooked in accordance with § 266.21.

(1) Good flavor and odor (essential requirements for a Grade A Product) means that the cooked product has the typical flavor and odor of the indicated species of fish and of the breading and is free from rancidity, bitterness, staleness, and off-flavors and off-odors of any kind.

(2) Reasonably good flavor and odor (minimum requirements of a Grade B Product) means that the cooked product is lacking in good flavor and odor but is free from objectionable off-flavors and off-odors of any kind.

§ 266.21 Definitions.

(a) Selection of the sample unit: The sample unit shall consist of 10 frozen raw breaded fish portions taken at random from one or more packages as required. The fish portions are spread out on a flat pan or sheet and are examined according to table 1. Definitions of factors for point deductions are as follows:

(b) Examination of sample, frozen state: (1) "Condition of package" refers to the presence in the package of loose breading and/or loose frost.

(2) "Ease of separation" refers to the difficulty of separating the portions from each other or from the packaging material.

(3) "Broken portion" means a portion with a break or cut equal to or greater than one-half the width or length of the portion.

(4) "Damaged portion" means a portion that has been mashed, physically or mechanically injured, misshaped or mutilated to the extent that its appearance is materially affected. The amount of damage is measured by using a grid composed of squares ¼-inch x ¼-inch (that is, squares with an area of ¼ square inch each) to measure the area of the portion affected. No deductions are made for damage of less than ¼ square inch.

(5) "Uniformity of size" refers to the degree of uniformity in length and width

TABLE 1—SCHEDULE OF POINT DEDUCTIONS PER SAMPLE UNIT OF 10 PORTIONS

Factors scored		Method of determining score	Deduct
Frozen state	1	Condition of package..... Small degree: Moderate loose breading and/or moderate frost..... Large degree: Excessive loose breading and/or excessive amount frost.....	3 6
	2	Ease of separation..... Minor: Hand separated with difficulty. Each affected..... Major: Separated only by knife or other instrument. Each affected.....	1 2
	3	Broken portion..... Break or cut greater than ¼ width or length. Each affected.....	10
	4	Damaged portion..... Mashed, mechanically and/or physically injured, misshaped or mutilated. ¹ Minor: 1 to 5 instances. Each affected..... Major: Over 5 instances. Each affected.....	2 4
	5	Size..... Deviation in length or width between the 2 largest and 2 smallest portions is: Up to ¼ inch..... Over ¼ inch and up to ½ inch..... Over ½ inch.....	0 2 10
	6	Uniformity..... Weight..... Weight ratio of the 2 heaviest divided by the 2 lightest portions: Over 1.0 but not over 1.3..... Over 1.3 but not over 1.4..... Over 1.4 but not over 1.6..... Over 1.6.....	0 2 4 10
	7	Distortion..... Minor: Bending, shrinking, twisting—¼ to ½ inch. Each affected..... Major: Excessive bending, shrinking, twisting—over ½ inch. Each affected.....	1 2
	8	Coating defects..... Bare spots, blistering, ridges, breaks, curds: ¹ Minor: 1 to 5 instances. Each affected..... Major: Over 5 instances. Each affected.....	1 2
	9	Discoloration..... Skin (except for style II), blood spots, bruises, and discolorations: ¹ Minor: 1 to 5 instances. Each affected..... Major: Over 5 instances. Each affected.....	2 4
	10	Bones..... Portions containing bones (potentially harmful). Each affected.....	10
Cooked state	11	Coating..... Small degree: Moderately dry, soggy, doughy, or tough..... Large degree: Farinaceous (mealy), pasty, very tough.....	5 10
	12	Texture..... Fish flesh..... Small degree: Moderately dry, soft, mushy..... Large degree: Dry to the point of brownness, very mushy, tough, or rubbery (skin for style II).....	5 10

¹ An instance—each ¼ square inch (¼-inch square).

of the frozen portions. Deviations are measured from the combined lengths of the two longest minus the combined lengths of the two shortest and/or the combined widths of the two widest minus the combined widths of the two narrowest portions in the sample. Deductions are not made for overall deviations in length or width up to $\frac{1}{4}$ inch.

(6) "Uniformity of weight" refers to the degree of uniformity of the weights of the portions. Uniformity is measured by the combined weight of the two heaviest portions divided by the combined weight of the two lightest portions in the sample. No deductions are made for weight ratios less than 1.2.

(c) (1) Cooked state means the state of the product after being cooked in accordance with the instructions accompanying the product. If, however, specific instructions are lacking, the product being inspected is cooked as follows:

(2) Transfer the product, while still frozen, into a wire mesh fry basket large enough to hold the fish portions in a single layer and cook by immersing them 3-5 minutes in liquid or hydrogenated cooking oil heated to 350 to 375° F. After cooking, allow the fish portions to drain 15 seconds and place them on a paper napkin or towel to absorb excess oil.

(d) Examination of sample, cooked state.

(1) "Distortion" refers to the degree of bending of the long axis of the portion. Distortion is measured as the greatest deviation from the long axis. Deductions are not made for deviations of less than $\frac{1}{4}$ inch.

(2) "Coating defects" refers to breaks, lumps, ridges, depressions, blisters or swells and curds in the coating of the cooked product. Breaks in the coating are objectionable bare spots through which the fish flesh is plainly visible. Lumps are objectionable outcroppings of breading on the portion surface. Ridges are projections of excess breading at the edges of the portions. Depressions are objectionable visible voids or shallow areas that are lightly covered by breading. Blisters are measured by the swelling or exposed area in the coating resulting from the bursting or breaking of the coating. Curd refers to crater-like holes in the breading filled with coagulated white or creamy albumin. Instances of these defects are measured by a plastic grid marked off in $\frac{1}{4}$ -inch squares ($\frac{1}{16}$ square inch). Each square is counted as 1 whether it is full or fractional.

(3) "Blemishes" refers to skin (except for Style II), blood spots or bruises, objectionable dark fatty flesh, or extrane-

ous material. Instances of blemishes refers to each occurrence measured by placing a plastic grid marked off in $\frac{1}{4}$ -inch squares ($\frac{1}{16}$ square inch) over the defect area. Each square is counted as 1 whether it is full or fractional.

(4) "Bones" means the presence of potentially harmful bones in a portion. A potentially harmful bone is one that after being cooked is capable of piercing or hurting the palate.

(5) "Texture defects of the coating" refers to the absence of the normal textural properties of the coating which are crispness and tenderness. Defects in coating texture are dryness, soginess, mushiness, doughiness, toughness, pastyness, as sensed by starchiness or other sticky properties felt by mouth tissues and/or meanness.

(6) "Texture defects of the fish flesh and texture of skin in Style II" refers to the absence of the normal textural properties of the cooked fish flesh and to the absence of tenderness of the cooked skin in Style II. Normal textural properties of cooked fish flesh are tenderness, firmness, and moistness without excess water. Texture defects of the cooked flesh are dryness, mushiness, toughness, and rubberiness. Texture defects of the cooked skin in Style II are mushiness, rubberiness, toughness, and stringiness.

(e) General definitions. (1) "Small" (overall assessment) refers to a condition that is noticeable but is not seriously objectionable.

(2) "Large" (overall assessment) refers to a condition that not only is noticeable but is seriously objectionable.

(3) "Minor" (individual assessment) refers to a defect that slightly affects the appearance and/or utility of the product.

(4) "Major" (individual assessment) refers to a defect that seriously affects the appearance and/or utility of the product.

(f) Minimum fish flesh content refers to the minimum percent, by weight, of

(iv) Stop-watch or regular watch readable to a second.

(v) Paper towels.

(vi) Spatula, 4-inch blade with rounded tip.

(vii) Nut picker.

(viii) Thermometer (immersion type) accurate to $\pm 2^\circ\text{F}$.

(ix) Copper sulfate crystals ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$)—one pound.

(2) Procedure. (1) Weigh all portions in the sample while they are still hard frozen.

(ii) Place each portion individually in a water bath that is maintained at 63° F. to 66° F. and allow to remain until the breading becomes soft and can easily be removed from the still frozen fish flesh (between 10 to 30 seconds for portions held in storage at 0° F.). If the portions were prepared using batters that are difficult to remove after one dipping, re-dip them for up to 5 seconds after the initial debreading and remove residual batter materials.

Note: Several preliminary trials may be necessary to determine the exact dip time required for "debreading" the portions in a sample unit. For these trials only, a saturated solution of copper sulfate (1 pound of copper sulfate in 2 liters of tap water) is necessary. The correct dip time is the minimum time of immersion in the copper sulfate solution required before the breading can easily be scraped off. Provided, (1) That the "debreaded" portions are still solidly frozen and (2) only a slight trace of blue color is visible on the surface of the "debreaded" fish portions.

(iii) Remove the portion from the bath; blot lightly with double thickness paper toweling; and scrape off or pick out coating from the fish flesh with the spatula or nut picker.

(iv) Weigh all the "debreaded" fish portions.

(v) Calculate the percent of fish flesh in the sample using the following formula:

$$\text{Percent fish flesh} = \frac{\text{Weight of fish flesh (d)}}{\text{Weight of raw breaded portions (a)}} \times 100$$

the average fish flesh content of 3 or more portions per sample unit as determined by the following method:

(i) Equipment needed. (1) Water bath (for example, a 3 to 4 liter beaker).

(ii) Balance accurate to 0.1 gram.

(iii) Clip tongs of wire, plastic, or glass.

§ 266.25 Tolerances for certification of officially drawn samples.

The sample rate and grades of specific lots shall be certified in accordance with Part 260, of this chapter (Regulations Governing Processed Fishery Products, Vol. 25 F.R. 9427 September 1, 1960) except that a sample unit shall consist of 10 portions taken at random from one or more packages as required.

Interested persons had until September 15, 1963, to submit written comments, sugges-

tions, or amendments with respect to the proposed amended regulations.



Department of Labor

WAGE AND HOUR AND PUBLIC CONTRACTS DIVISIONS

MINIMUM WAGE CHANGES AFFECT FISH CANNERY WORKERS AND ON-SHORE WORKERS:

The minimum wage for fish cannery workers increased from \$1.15 to \$1.25 an hour on September 3, 1963. All other on-shore fishery workers, except "white-collar executives and administrators," will still receive the \$1.00 per hour minimum wage. The present \$1.00 an hour minimum wage rate for on-shore fishery workers will advance to \$1.15 an hour on September 3, 1964, and to \$1.25 an hour on September 3, 1965. The overtime exemption for fishery occupations is still in force.

Exempt from the minimum wage law are "white-collar executives and administrators." An executive is one who is in charge of a business, or subdivision of a business, with at least two subordinates. He must have authority to exercise independent judgment and discretion. His salary must be at least \$80 per week, and no more than 20 percent of his time may be spent in activities which are not directly or closely related to his managerial duties. An administrator has the same limitations as to time and judgment, but he must receive a salary of \$95 per week, and his job must be nonmanual and related to business policies. Increases in these salary levels have been proposed but are not yet final.

General clerical employees are not considered to be included in the fishery exemption and must be paid a minimum of \$1.25 an hour, effective September 3, 1963, plus overtime at not less than one and one-half times the employee's regular rate of pay for all hours worked over 40 a week. But in plants engaged exclusively in "canning, processing, marketing, freezing, curing, storing, packing for shipment, or distributing of any kind of fish, shellfish, or other aquatic forms of animal or vegetable life, or any byproduct thereof" all employees, including office workers, are generally exempt from overtime requirements. Minimum hourly wage rates will depend on whether the employee is engaged in operations functionally related to canning (\$1.25 after September 3, 1963) or to processing other than canning (\$1.00 for the next year). In establishments engaged in both exempt and nonexempt operations, the

wage rates and overtime requirements depend on the functional relation of the employees' work to the different operations.

For additional information on fishery minimum wage regulations, "Interpretative Bulletin, Part 784," is available from any office of the Wage and Hour Division, U. S. Department of Labor.



Department of State

AGENCY FOR INTERNATIONAL DEVELOPMENT

FISHERIES AID GRANTS TO FOREIGN COUNTRIES, 1955-1962:

A list of financial grants by the Agency for International Development (AID) to aid and rehabilitate the fisheries of a number of foreign countries appeared in the July 22, 1963, Congressional Record. Senator Gruening presented the list in the Senate for publication. A summary of the total amount granted to foreign countries for fishing projects between fiscal years 1955-1962 follows:

China.....	\$848,000
Cambodia.....	150,000
Indonesia.....	907,198
Philippines.....	82,000
Thailand.....	147,000
Vietnam.....	1,906,500
Korea.....	5,351,000
Laos.....	13,450
Ethiopia.....	45,200
India.....	1,128,620
Liberia.....	167,280
Pakistan.....	1,355,670
Turkey.....	18,500
Tunisia.....	147,000
Somali.....	337,000
Ghana (fiscal year 1962).....	66,000
Ivory Coast (fiscal year 1962).....	200,000
Nigeria (fiscal year 1962).....	195,000
Iceland.....	14,600
Spain.....	2,000
Yugoslavia.....	100,000
South America:	
Chile (fiscal year 1962).....	26,000
El Salvador.....	23,055
Peru.....	151,971
British Guiana.....	8,000
Total.....	13,399,544

The purpose of some of the grants made for the development of fisheries in foreign countries under the AID program during fiscal years 1955-1962 is shown in the examples given below:

China:	
Ocean fisheries improvement, fiscal year 1955.....	\$204,000
Fishing fleet rehabilitation, fiscal year 1956.....	5,000
Fish propagation, fiscal year 1956.....	5,000
Fishing fleet rehabilitation program, fiscal year 1957.....	17,000
Fisheries, fiscal year 1957.....	13,000
Tuna long liners, fiscal year 1957.....	530,000

Fisheries development:	
Fiscal year 1958.....	11,000
Fiscal year 1959.....	13,000
Fiscal year 1960.....	26,000
Fiscal year 1961.....	21,000
Total.....	848,000

Cambodia:	
Fisheries conservation:	
Fiscal year 1958.....	25,000
Fiscal year 1959.....	41,000
Fiscal year 1960.....	31,000
Fiscal year 1961.....	34,000
Fiscal year 1962.....	28,000
Total.....	159,000

Indonesia:	
Expansion and modernization of marine fisheries, fiscal year 1958.....	
Expansion of inland fisheries, fiscal year 1958.....	
Expansion and modernization of marine and inland fisheries:	
Fiscal year 1956.....	150,496
Fiscal year 1957.....	149,000
Fiscal year 1958.....	68,000
Fiscal year 1959.....	84,000
Fiscal year 1960.....	77,000
Fiscal year 1961.....	70,000
Fiscal year 1962.....	23,000
Total.....	907,196

Korea:	
Fishing boat construction, fiscal year 1956.....	
Fisheries development:	
Fiscal year 1957.....	2,314,000
Fiscal year 1958.....	180,000
Fiscal year 1959.....	475,000
Fisheries development (typhoon rehabilitation):	
Fiscal year 1961.....	409,000
Total.....	5,351,000

India:	
Project for modernization and expansion of marine and inland fisheries and exploratory fishing:	
Fiscal year 1955.....	278,100
Fiscal year 1956.....	437,520
Fiscal year 1957.....	93,000
Fiscal year 1958.....	134,000
Fiscal year 1959.....	106,000
Fiscal year 1960.....	40,000
Fiscal year 1961.....	40,000
Total.....	1,128,620

Vietnam:	
Development of inland fisheries, fiscal year 1955.....	
Development of marine fisheries, fiscal year 1955.....	
Development of inland fisheries, fiscal year 1956.....	
Development of marine fisheries, fiscal year 1956.....	
Development of inland fisheries, fiscal year 1957.....	
Development of marine fisheries, fiscal year 1957.....	
General fisheries development, fiscal year 1958.....	
Fisheries development:	
Fiscal year 1959.....	898,000
Fiscal year 1960.....	409,000
Total.....	1,833,500
Fisheries resources, fiscal year 1962.....	
Total.....	1,908,500

Pakistan:	
Karachi Fish Harbor, fiscal year 1955.....	
Fisheries development:	
West Pakistan, fiscal year 1956.....	371,375

Pakistan—Continued	
Fisheries development—Con.	
East Pakistan, fiscal year 1956.....	
West Pakistan, fiscal year 1957.....	
East Pakistan, fiscal year 1957.....	
West Pakistan, fiscal year 1958.....	
East Pakistan, fiscal year 1958.....	
West Pakistan, fiscal year 1959.....	
East Pakistan, fiscal year 1959.....	
West Pakistan, fiscal year 1960.....	
East Pakistan, fiscal year 1960.....	
West Pakistan, fiscal year 1961.....	
East Pakistan, fiscal year 1961.....	
West Pakistan, fiscal year 1962.....	
Total.....	1,355,870

Somali:	
Fisheries:	
Fiscal year 1958.....	121,000
Fiscal year 1959.....	18,000
Fisheries improvement:	
Fiscal year 1960.....	61,000
Fiscal year 1961.....	30,000
Fiscal year 1962.....	107,000
Total.....	337,000

Note: See Commercial Fisheries Review, May 1962 p. 77.



U. S. Tariff Commission

IMPORT TARIFF SCHEDULE CHANGES INCLUDE FISH BLOCKS AND OTHER FISHERY PRODUCTS:

The U. S. Tariff Commission has submitted to the President and the Congress a series of Supplemental Reports (Nos. 1 to 6) relating to the Tariff Classification Study of November 15, 1960. These reports set forth changes in the Tariff Schedules of the United States which the Commission has decided are necessary to reflect changes made in the tariff treatment of imported articles by certain statutes, and administrative and judicial rulings.

The Fourth Supplemental Report contains language defining fish blocks in accordance with rulings of the Customs Court. In essence it provides for a 1-cent-per-pound duty for fish blocks packed in packages weighing over 10 pounds. As originally proposed in the Tariff Classification Study, fish blocks would possibly have been classifiable with fish fillets and, dutiable at the higher fillet rate, rather than the 1-cent-a-pound duty which fish blocks in bulk have carried for some time. Following hearings before the Commission in the fall of 1962, the language was clarified, but only to the effect that the fish blocks were utilized for mincing, grinding, and processing into fish sticks. After further conferences between trade interests and the Tariff Commission, the lan-

guage as contained in the Fourth Supplemental Report was selected, and more fully reflects the action of the Customs Court.

No change will take place in the duty rate for fish blocks as a result of the Fourth Supplemental Report. They will remain dutiable at 1 cent a pound in bulk. The new Tariff Schedules with the simplified language were to go into effect on August 31, 1963. At that time, imported fish blocks which weigh 10 pounds or less will be classified as fish fillets and will be dutiable at the higher duty

rate. Only a very small amount of imported fish blocks are packed in packages of less than 10 pounds.

Fishery products are included in the following reports issued by the U. S. Tariff Commission: Third Supplemental Report (May 7, 1963); Fourth (May 9, 1963); Fifth (May 16, 1963); Sixth (May 23, 1963).

The third, fourth, fifth, and sixth Supplemental Reports list fishery products and any changes thereto, as follows:

Schedule 1 - Animal and Vegetable Products			
Item	Articles	Rates of Duty 1/	
		Column 1	Column 2
	From <u>Third Supplemental Report</u> :		
	PART 3. - FISH AND SHELLFISH		
	Subpart A. - Fish, Fresh, Chilled, or Frozen		
110.33	Frozen swordfish	0.75¢ per lb.	
	Insert immediately before item 110.60, a new coordinate provision, as follows:		

110.57	Wolf fish (sea catfish)	1¢ per lb.	2.5¢ per lb.
	Subpart B. - Fish, Dried, Salted, Pickled, Smoked, or Kippered		
111.10	Cod, cusk, haddock, hake, and pollock	0.2¢ per lb.	
	Substitute the following for items 111.22 and 111.24 (Cod, cusk, haddock, hake, and pollock, salted or pickled) and the immediately preceding superior heading:		

111.22	Whole; or processed by removal of heads, fins, viscera, scales, vertebral columns, or any combination thereof, but not otherwise processed	0.2¢ per lb.	1.25¢ per lb.

111.28	Cod, cusk, haddock, hake, and pollock	0.75¢ per lb.	
	Substitute the following for items 111.32 and 111.35 (herring, salted or pickled) and the immediately preceding superior heading:		

111.32	In bulk or in immediate containers weighing with their contents over 15 pounds each	0.1¢ per lb.	1¢ per lb.

111.40	Mackerel	0.2¢ per lb.	
111.44	Mackerel	10% ad val.	
111.64	Cod, cusk, haddock, hake, and pollock	0.5¢ per lb.	
111.68	Cod, cusk, haddock, hake, and pollock	0.1¢ per lb.	
111.72	Herring	0.1¢ per lb.	
111.80	Herring	0.9¢ per lb.	
	Subpart C. - Fish in Airtight Containers		
112.08	Herring	8% ad val.	
112.40	Anchovies	12% ad val.	
112.86	Sardines	24% ad val.	

(Schedule continued on p. 107)

Schedule 1- Animal and Vegetable Products (Contd.)			
Item	Articles	Rates of Duty ^{1/}	
		Column 1	Column 2
Subpart D. - Other Fish Products			
113.01	Pastes and sauces	8% ad val.	
113.08	Balls, cakes, puddings	3% ad val.	
113.35	Fish roe	5.5% ad val.	
Subpart E. - Shellfish			
Substitute the following for item 114.35 (oysters):			

In airtight containers:			
114.34	Smoked	4.5¢ per lb. (including wt. of immediate container)	8¢ per lb. (including wt. of immediate container)
114.36	Other	6¢ per lb. (including wt. of immediate container)	8¢ per lb. (including wt. of immediate container)
From <u>Fourth Supplemental Report</u> :			
REFERENCE NO. 2 - Vol. 2, p. 28; Vol. 3, p. 23:			
Insert immediately after item 110.45 (<u>fish</u> , <u>fresh</u> , <u>chilled or frozen</u>), a new provision as follows:			

110.47	Skinned and boned, whether or not divided into pieces, and frozen into blocks each weighing over 10 pounds, imported to be minced, ground, or cut into pieces of uniform weights and dimensions	1¢ per lb.	1.25¢ per lb.

Explanation: This change incorporates the substance of customs practices based upon recent court rulings (CD's 2327 and 2340). The principle of these rulings cannot be effectively administered except by following the fish into consumption. The language published for the hearing has been modified so as to permit the blocks to be cut into uniform pieces or portions not only for fish sticks but also for other purposes as well.			
Subpart C. - Animal Oils, Fats, and Greases, Crude or Refined			
177.32	Crude sperm oil	0.065¢ per lb.	
177.36	Whale oil	1.26¢ per lb.	
PART 15. - OTHER ANIMAL AND VEGETABLE PRODUCTS.			
Subpart B. - Edible Preparations			
182.05	Antipasto	10% ad val.	
From <u>Fifth Supplemental Report</u> :			
Item 426.88 - <u>sodium alginate</u> : In rate of duty column numbered 1, change the rate from "12.5% ad val." to "10% (11%) ad val.*".			
Explanation: These changes are based on Proclamation 3512 of December 28, 1962, regarding compensatory concessions granted to the United Kingdom.			
From <u>Sixth Supplemental Report</u> :			
REFERENCE NO. 2 - Vol. 2, p. 119; Vol. 3, p. 247:			
Insert in proper numerical sequence, a new provision as follows:			
190.47	Fish scales, crude	Free	Free
Explanation: This provision is inserted to clarify the status under the new schedules of fish scales currently admitted free of duty under paragraph 1677, <u>Tariff Act of 1930</u> .			
^{1/} Column 1 shows Trade Agreement Rate; Column 2, when indicated, gives the full rate.			

Note: See Commercial Fisheries Review, April 1963 p. 82; December 1962 p. 90; December 1961 p. 93.



Department of the Treasury

INTERNAL REVENUE SERVICE

FISHERMEN'S ESTIMATED INCOME TAX:

Regulations extending to fishermen the same treatment accorded farmers in relation to estimated income tax were published by the Internal Revenue Service in a "Notice

of Proposed Rule Making" (Federal Register, July 2, 1963). The regulations as amended conform with Public Law 87-682 approved on September 25, 1962.

The "Notice of Proposed Rule Making" as it appeared in the Federal Register of July 2 follows:

DEPARTMENT OF THE TREASURY

Internal Revenue Service

[26 CFR Part 1]

INCOME TAX; TAXABLE YEARS BEGINNING AFTER DECEMBER 31, 1953

Extending to Fishermen the Same Treatment Accorded Farmers in Relation to Estimated Tax

Notice is hereby given, pursuant to the Administrative Procedure Act, approved June 11, 1946, that the regulations set forth in tentative form below are proposed to be prescribed by the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury or his delegate. Prior to the final adoption of such regulations, consideration will be given to any comments or suggestions pertaining thereto which are submitted in writing, in duplicate, to the Commissioner of Internal Revenue, Attention: T:P, Washington 25, D.C., within the period of 30 days from the date of publication of this notice in the Federal Register. Any person submitting written comments or suggestions who desires an opportunity to comment orally at a public hearing on these proposed regulations should submit his request, in writing, to the Commissioner within the 30-day period. In such a case, a public hearing will be held and notice of the time, place, and date will be published in a subsequent issue of the Federal Register. The proposed regulations are to be issued under the authority contained in section 7808 of the Internal Revenue Code of 1954 (60A Stat. 917; 26 U.S.C. 7805).

[SEAL] MORTIMER M. CAPLIN,
Commissioner of Internal Revenue.

In order to conform the Income Tax Regulations (26 CFR Part 1) under sections 6015(f), 6073, 6153, and 6054 of the Internal Revenue Code of 1954 to the Act of September 25, 1962 (Public Law 87-682, 76 Stat. 875), such regulations are amended as follows:

PARAGRAPH 1. Section 1.6015(f) is amended by revising subsection (f) of section 6015 and the historical note to read as follows:

§ 1.6015(f) Statutory provisions; declaration of estimated income tax by individuals; return as declaration or amendment.

SEC. 6015. Declaration of estimated income tax by individuals. . . .

(f) Return as declaration or amendment. If on or before January 31 (or February 15, in the case of an individual referred to in section 6073(b)), relating to income from farming or fishing) of the succeeding taxable year the taxpayer files a return, for the taxable year for which the declaration is re-

quired, and pays in full the amount computed on the return as payable, then, under regulations prescribed by the Secretary or his delegate—

(1) If the declaration is not required to be filed during the taxable year, but is required to be filed on or before January 15, such return shall be considered as such declaration; and

(2) If the tax shown on the return (reduced by the sum of the credits against tax provided by part IV of subchapter A of chapter 1) is greater than the estimated tax shown in a declaration previously made, or in the last amendment thereof, such return shall be considered as the amendment of the declaration permitted by subsection (e) so to be filed on or before January 15.

In the application of this subsection in the case of a taxable year beginning on any date other than January 1, there shall be substituted, for the 15th or last day of the month specified in this subsection, the 15th or last day of the month which corresponds thereto.

[Sec. 6015(f) as amended by sec. 74, Technical Amendments Act 1953 (73 Stat. 460); sec. 1(a)(1), Act of Sept. 25, 1962 (Public Law 87-682, 76 Stat. 875)]

PAR. 2. Section 1.6015(f)-1 is amended by revising subparagraph (1) of paragraph (a) to read as follows:

§ 1.6015(f)-1 Return as declaration or amendment.

(a) Time for filing return. (4) If the taxpayer files his return for the calendar year on or before January 31 (or February 15, in the case of an individual referred to in section 6073(b)), relating to income from farming or, with respect to taxable years beginning after December 31, 1962, from fishing) of the succeeding calendar year, or if the taxpayer is on a fiscal year basis, on or before the last day of the first month (in the case of a farmer or, with respect to taxable years beginning after December 31, 1962, a fisherman, the 15th day of the second month) immediately succeeding the close of such fiscal year), and pays in full the amount computed on the return as payable, then—

(1) If the declaration is not required to be filed during the taxable year, but is required to be filed on or before January 15 of the succeeding year (or the date corresponding thereto in the case of a fiscal year), such return shall be considered as such declaration; or

(2) If a declaration was filed during the taxable year, such return shall be considered as the amendment of the declaration permitted by section 6015(e) to be filed on or before January 15 of the succeeding year (or the date corresponding thereto in the case of a fiscal year). Hence, for example, an individual taxpayer on the calendar year basis who, subsequent to September 1, 1963, first meets the requirements of section 6015(a) which necessitate the filing of a declaration for 1963, may satisfy the requirements as to the filing of such declaration by filing his return for 1963 on or

before January 31, 1964 (February 15, 1964, in the case of a farmer or fisherman), and paying in full at the time of such filing the tax shown thereon to be payable. Likewise, if a taxpayer files on or before September 15, 1963, a timely declaration for such year and subsequent thereto and on or before January 31, 1964, files his return for 1963, and pays at the time of such filing the tax shown by the return to be payable, such return shall be treated as an amended declaration, timely filed.

PAR. 3. Section 1.6073 is amended by revising subsections (a) and (b) of section 6073 and by adding a historical note. The amended provisions read as follows:

§ 1.6073 Statutory provisions; time for filing declarations of estimated income tax by individuals.

SEC. 6073. Time for filing declarations of estimated income tax by individuals—(a) Individuals other than farmers or fishermen. Declarations of estimated tax required by section 6015 from individuals regarded as neither farmers nor fishermen for the purpose of that section shall be filed on or before April 15 of the taxable year, except that if the requirements of section 6015 are first met—

(1) After April 1 and before June 2 of the taxable year, the declaration shall be filed on or before June 15 of the taxable year, or

(2) After June 1 and before September 1 of the taxable year, the declaration shall be filed on or before September 15 of the taxable year, or

(3) After September 1 of the taxable year, the declaration shall be filed on or before January 15 of the succeeding taxable year.

(b) Farmers or fishermen. Declarations of estimated tax required by section 6015 from individuals whose estimated gross income from farming or fishing (including oyster farming) for the taxable year is at least two-thirds of the total estimated gross income from all sources for the taxable year may, in lieu of the time prescribed in subsection (a), be filed at any time on or before January 15 of the succeeding taxable year.

[Sec. 6073 as amended by sec. 1 (a) (2), (b), (c), Act of Sept. 25, 1962 (Public Law 87-682, 76 Stat. 875)]

PAR. 4. Section 1.6073-1 is amended by revising paragraphs (a), (b), and (d) to read as follows:

§ 1.6073-1 Time and place for filing declarations of estimated income tax by individuals.

(a) Individuals other than farmers or fishermen. Declarations of estimated tax for the calendar year shall be made on or before April 15th of such calendar year by every individual whose anticipated income for the year meets the requirements of section 6015(a). If, however, the requirements necessitating the filing of the declaration are first met, in the case of an individual on the calendar year basis, after April 1st, but before June 2d of the calendar year, the declaration must be filed on or before June 15th; if such requirements are first met

the declaration must be filed on or before September 15th; and if such requirements are first met after September 1st, the declaration must be filed on or before January 15th of the succeeding calendar year. In the case of an individual on the fiscal year basis, see § 1.6073-2.

(b) *Farmers or fishermen*.—(1) *In general*. In the case of an individual on a calendar year basis, whose estimated gross income from farming (including oyster farming) or, with respect to taxable years beginning after December 31, 1962, from fishing for the calendar year is at least two-thirds of his total estimated gross income from all sources for such year, his declaration may be filed on or before the 15th day of January of the succeeding calendar year in lieu of the time prescribed in paragraph (a) of this section. For the filing of a return in lieu of a declaration, see paragraph (a) of § 1.6015(f)-1.

(2) *Farmers*. The estimated gross income from farming is the estimated income resulting from oyster farming, the cultivation of the soil, the raising or harvesting of any agricultural or horticultural commodities, and the raising of livestock, bees, or poultry. In other words, the requisite gross income must be derived from the operations of a stock, dairy, poultry, fruit, or truck farm, or plantation, ranch, nursery, range, orchard, or oyster bed. If an individual receives for the use of his land income in the form of a share of the crops produced thereon such income is from farming. As to determination of income of farmers, see sections 61 and 162 and the regulations thereunder.

(3) *Fishermen*. The estimated gross income from fishing is the estimated income resulting from the catching, taking, harvesting, cultivating, or farming of any kind of fish, shellfish (for example, clams and mussels), crustacea (for example, lobsters, crabs, and shrimps), sponges, seaweeds, or other aquatic forms of animal and vegetable life. The estimated gross income from fishing includes the income expected to be received by an officer or member of the crew of a vessel while the vessel is engaged in any such activity, whether or not the officer or member of the crew is himself so engaged, and, in the case of an individual who is engaged in any such activity in the employ of any person, the income expected to be received by such individual from such employment. In addition, income expected to be received for services performed as an ordinary incident to any such activity is estimated gross income from fishing. Similarly, for example, the estimated gross income from fishing includes income expected to be received from the shore services of an officer or member of the crew of a vessel engaged in any such activity, if such services are an ordinary incident to any such activity. Services performed as an ordinary incident to such activities include, for example, services performed in such cleaning, icing, and packing of fish as are necessary for the immediate preservation of the catch.

(d) *Amendment of declaration*. An amended declaration of estimated tax may be filed during any interval between installment dates prescribed for the tax-

able year. However, no amended declaration may be filed until after the installment date on or before which the original declaration was filed, and only one amended declaration may be filed during each interval between installment dates. An amended declaration shall be filed with the district director with whom the original declaration was filed.

PAR. 5. Section 1.6073-2 is amended to read as follows:

§ 1.6073-2 Fiscal years.

(a) *Individuals other than farmers or fishermen*. In the case of an individual on the fiscal year basis, the declaration must be filed on or before the 15th day of the 4th month of the taxable year. If, however, the requirements of section 6015(a) are first met after the 1st day of the 4th month and before the 2d day of the 6th month, the declaration must be filed on or before the 15th day of the 6th month of the taxable year. If such requirements are first met after the 1st day of the 6th month, the declaration must be filed on or before the 15th day of the 9th month of the taxable year. Thus, if an individual taxpayer has a fiscal year ending on June 30, 1956, his declaration must be filed on or before October 15, 1955, if the requirements of section 6015(a) are met on or before October 1, 1955. If, however, such requirements are not met until after October 1, 1955, and before December 2, 1955, the declaration need not be filed until December 15, 1955.

(b) *Farmers or fisherman*. An individual on the fiscal year basis whose estimated gross income from farming or, with respect to taxable years beginning after December 31, 1962, from fishing (as defined in paragraph (b) of § 1.6073-1) is at least two-thirds of his total estimated gross income from all sources for such taxable year may file his declaration on or before the 15th day of the month immediately following the close of his taxable year.

PAR. 6. Section 1.6073-3 is amended to read as follows:

§ 1.6073-3 Short taxable years.

(a) *Individuals other than farmers or fishermen*. In the case of short taxable years the declaration shall be filed on or before the 15th day of the 4th month of such taxable year if the requirements of section 6015(a) are met on or before the 1st day of the 4th month of such year. If such requirements are first met after the 1st day of the 4th month but before the 2d day of the 6th month, the declaration must be filed on or before the 15th day of the 6th month. If such requirements are first met after the 1st day of the 6th month but before the 2d day of the 9th month, the declaration must be filed on or before the 15th day of the 9th month. If, however, the period for which the declaration is filed is one of 4 months, or one of 6 months and the requirements of section 6015(a) are not met until after the 1st day of the 4th month, or

one of 9 months and such requirements are not met until after the 1st day of the 6th month, the declaration may be filed on or before the 15th day of the succeeding taxable year.

(b) *Farmers or fishermen*. In the case of an individual whose estimated gross income from farming or, with respect to taxable years beginning after December 31, 1962, from fishing (as defined in paragraph (b) of § 1.6073-1) for a short taxable year is at least two-thirds of his total estimated gross income from all sources for such taxable year, his declaration may be filed on or before the 15th day of the month immediately following the close of such taxable year.

PAR. 7. Section 1.6153 is amended by revising subsection (b) of section 6153 and by adding a historical note. The amended provision reads as follows:

§ 1.6153 Statutory provisions; installment payments of estimated income tax by individuals.

SEC. 6153. Installment payments of estimated income tax by individuals. * * *

(b) *Farmers or fishermen*. If an individual referred to in section 6073(b) (relating to income from farming or fishing) makes a declaration of estimated tax after September 15 of the taxable year and on or before January 15 of the succeeding taxable year, the estimated tax shall be paid in full at the time of the filing of the declaration.

[Sec. 6153 as amended by sec. 1 (a)(3), (e), Act of Sept. 25, 1962 (Pub. Law 87-652, 78 Stat. 579)]

PAR. 8. Section 1.6153-1 is amended by revising paragraph (b) to read as follows:

§ 1.6153-1 Payment of estimated tax by individuals.

(b) *Farmers or fishermen*. Special provisions are made with respect to the filing of the declaration and the payment of the tax by an individual whose estimated gross income from farming or, with respect to taxable years beginning after December 31, 1962, from fishing is at least two-thirds of his total gross income from all sources for the taxable year. As to what constitutes income from farming or fishing within the meaning of this paragraph, see paragraph (b) of § 1.6073-1. The declaration of such an individual may be filed on or before January 15 of the succeeding taxable year in lieu of the time prescribed for individuals generally. Where such an individual makes a declaration of estimated tax after September 15 of the taxable year, the estimated tax shall be paid in full at the time of the filing of the declaration.

PAR. 9. Section 1.6854 is amended by revising subsection (b) (1) of section 6854 and so much of subparagraph (C) of subsection (d) (1) of section 6854 as precedes clause (1), and by adding a historical note. The amended provisions read as follows:

§ 1.6854 Statutory provisions; failure by individual to pay estimated income tax.

SEC. 6854. Failure by individual to pay estimated income tax. * * *

(b) Amount of underpayment. * * * (1) The amount of the installment which would be required to be paid if the estimated

tax were equal to 70 percent (66 2/3 percent in the case of individuals referred to in section 6073(b), relating to income from farming or fishing) of the tax shown on the return for the taxable year or, if no return was filed, 70 percent (66 2/3 percent in the case of individuals referred to in section 6073(b) relating to income from farming or fishing) of the tax for such year, over

(d) *Exception.* * * *

(1) * * *

(C) An amount equal to 70 percent (66 2/3 percent in the case of individuals referred to in section 6073(b), relating to income from farming or fishing) of the tax for the taxable year computed by placing on an annualized basis the taxable income for the months in the taxable year ending before the month in which the installment is required to be paid. For purposes of this subparagraph, the taxable income shall be placed on an annualized basis by—

[Sec. 6654 as amended by sec. 1(a)(4), Act of Sept. 26, 1962 (Public Law 87-662, 76 Stat. 876)]

PAR. 10. Section 1.6654-1 is amended by revising subparagraph (1) (i) of paragraph (a) and Example (1) in paragraph (c) to read as follows:

§ 1.6654-1 Addition to the tax in the case of an individual.

(a) *In general.* (1) * * *

(i) 70 percent (66 2/3 percent in the case of individuals referred to in section 6073(b), relating to income from farming or, with respect to taxable years be-

ginning after December 31, 1962, from fishing) of the tax shown on the return for the taxable year, or if no return was filed, 70 percent (66 2/3 percent in the case of individuals referred to in section 6073(b), relating to income from farming or, with respect to taxable years beginning after December 31, 1962, from fishing) of the tax for such year, divided by the number of installment dates prescribed for such taxable year, over

(c) *Examples.* * * *

Example (1). An individual taxpayer files his return for the calendar year 1956 on April 15, 1956, showing a tax of \$40,000. He has paid a total of \$20,000 of estimated tax in four equal installments of \$5,000 on each of the four installment dates prescribed for such year. No other payments were made prior to the date the return was filed. Since the amount of each installment paid by the last date prescribed for payment thereof is less than one-quarter of 70 percent of the tax shown on the return, the addition to the tax is applicable in respect of the underpayment existing as of each installment date and is computed as follows:

(1) Amount of tax shown on return.....	\$40,000
(2) 70 percent of item (1).....	28,000
(3) One-fourth of item (2).....	7,000
(4) Deduct amount paid on each installment date.....	5,000
(5) Amount of underpayment for each installment date (item (3) minus item (4)).....	2,000

(6) Addition to the tax:

1st installment—period 4—	
15-56 to 4-15-56.....	\$120
2d installment—period 3—	
15-56 to 4-15-56.....	100
3d installment—period 2—	
15-56 to 4-15-56.....	70
4th installment—period 1—	
15-56 to 4-15-56.....	30
Total.....	\$320

PAR. 11. Section 1.6654-2 is amended by revising so much of subparagraph (3) of paragraph (a) as precedes subdivision (i). This amended provision reads as follows:

§ 1.6654-2 Exceptions to imposition of the addition to the tax in the case of individuals.

(a) *In general.* * * *

(3) The amount which would have been required to be paid on or before the date prescribed for payment if the estimated tax were an amount equal to 70 percent (66 2/3 percent in the case of individuals referred to in section 6073(b), relating to income from farming or, with respect to taxable years beginning after December 31, 1962, from fishing) of the tax computed by placing on an annual basis the taxable income for the calendar months in the taxable year preceding such date. The taxable income shall be placed on an annual basis by—

Note: See Commercial Fisheries Review, March 1963 p. 91.



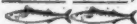
United States District Court

BREADED SEAFOOD PROCESSOR GRANTED OVERTIME EXEMPTION UNDER FAIR LABOR STANDARDS ACT:

On July 26, 1963, the U. S. District Court for the Eastern District of Virginia decided a case involving the U. S. Labor Department's interpretative rulings (29 CFR, Part 784, Sections 784.110 through 784.112) that processors of fishery products consisting of more than 20 percent nonaquatic matter are not entitled to an employee overtime exemption under the Fair Labor Standards Act.

An injunction sought by the Labor Department against a breaded seafood processor in Newport News, Va., had raised the issue of whether the Labor Department's criterion should apply to breaded oysters, breaded scallops, breaded shrimp, breaded fish sticks and portions, crab cakes, and deviled crabs. (Practically all breaded frozen seafoods must, in order to be marketable, contain more than 20 percent of breading materials.) As applied to those breaded products, the Labor Department's interpretation was held to be invalid, and the injunction was denied.

Note: See Commercial Fisheries Review, March 1962 p. 62.



White House

REVISED TARIFF SCHEDULES EFFECTIVE AUGUST 31, 1963:

The revised Tariff Schedules of the United States were to become effective on August 31, 1963, according to the President's Special Representative for Trade Negotiations. The Tariff Schedules were to take effect 10 days after the Presidential Proclamation of the new nomenclature and rates contained in them. The proclamation was issued in accordance with the authority of the Tariff Classification Act of 1962.

The Tariff Classification Act of 1962 authorizes the President, upon the completion of certain procedures, to proclaim new United States Tariff Schedules based upon studies and recommendations of the U. S. Tariff Commission. The Commission's work was initiated under the authority of the Customs Simplification Act of 1954.

The new Tariff Schedules simplify the determination and application of United States import duties. They thus benefit domestic producers, who will have more dependable knowledge of the duty rates applying to the types of products they sell and the materials

Eighty-Eighth Congress

(First Session)



Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.

ANTIDUMPING ACT AMENDMENT: H. R. 7965 (Whalley) Aug. 6, 1963; H. R. 7984 (Morgan) Aug. 7, 1963; H. R. 8024 (Johnson) Aug. 12, 1963, and H. R. 8062 (Rooney) Aug. 14, 1963, introduced in House, to amend the Antidumping Act, 1921; referred to Committee on Ways and Means. Similar or identical to other bills previously introduced in House.

CHEMICAL PESTICIDES COORDINATION: Pesticide Controls (Hearings before the Subcommittee on Fisheries and Wildlife Conservation of the Committee on Merchant Marine and Fisheries, House of Representatives, 88th Congress, 1st Session), 159 pp., printed. Contains hearings held June 18 and 19, 1963, on H. R. 2857 and H. R. 5589, to provide for advance consultation with the Fish and Wildlife Service and state wildlife agencies before the beginning of any Federal program involving the use of pesticides or other chemicals designed for mass biological controls; and H. R. 4487 and H. R. 5588, to amend the act of Aug. 1, 1958, in order to prevent or minimize injury to fish and wildlife from the use of insecticides, herbicides, fungicides, and pesticides; reports of various Federal agencies; statements presented by personnel of various Federal agencies, members of Congress, and state officials; additional material and communications submitted for the consideration of the Committee.

COLLISIONS AT SEA, REGULATIONS FOR PREVENTION: Regulations for Preventing Collisions at Sea and Promotion, etc., of Coast Guard Officers (Hearing before the Merchant Marine and Fisheries Subcommittee of the Committee on Commerce, U. S. Senate, 88th Congress, 1st Session), 62 pp., printed. Contains hearing held June 27, 1963, on S. 1459, to authorize the President to proclaim regulations for preventing collisions at sea; text of S. 1459; reports of various Federal agencies; and statements of witnesses.

The Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Commerce, on Aug. 14, 1963, in executive session, approved for full committee consideration H. R. 6012, amended, authorizing the President to proclaim certain regulations for preventing collisions at sea.

COMMODITY PACKAGING AND LABELING: Packaging and Labeling Legislation (Hearings before the Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary, U. S. Senate, 88th Congress, 1st Session pursuant to S. Res. 56), 844 pp., printed. Contains hearings held April 24, 25, and 26, 1963, on

S. 387, to amend the Clayton Act to prohibit restraints of trade carried into effect through the use of unfair and deceptive methods of packaging or labeling certain consumer commodities distributed in commerce, and for other purposes; statements given by members of Congress, state and local governments, and industry people; exhibits and appendix; and biographical material.

CONSERVATION OF MARINE FISHERIES RE-SOURCES: S. 1988 (Bartlett) introduced in Senate on Aug. 6, 1963, to prohibit fishing in the territorial waters of the United States and in certain other areas by persons other than nationals or inhabitants of the United States; referred to Committee on Commerce. Sen. Bartlett stated that the bill declares it unlawful for foreign vessels to fish within the territorial sea or to engage in the taking of continental shelf resources claimed by the United States, except as provided by an international agreement to which the United States is a party. Appropriate penalties for violation--not more than a \$10,000 fine or 1 year imprisonment, or both--are delineated. Enforcement procedures permit the authorities to seize vessels illegally operating and allow the court to order forfeiture of the vessel. Administrative rules are to be issued by the Secretary of the Treasury. The responsibility for enforcement is to be shared by the Coast Guard, the Department of the Interior, the Bureau of Customs, and such State and territorial officers as the Secretary of the Interior may designate. Federal district courts are empowered to issue such warrants as may be required for the enforcement of the act. Persons authorized to carry out enforcement activities are given the power to execute these warrants, to arrest violators of the act, and to search suspect vessels. Provides for the seizure and disposal of fish taken in violation of the act, and establishes procedure for setting of a bond by alleged violators. Also introduced in the House on Aug. 6, 1963; H. R. 7954 (Rivers), referred to House Committee on Merchant Marine and Fisheries; similar to S. 1988.

Senator Gruening (Alaska) on Aug. 6, 1963, inserted in the Congressional Record (pages 13403-13408) correspondence received from several sources from Alaska with reference to Soviet and Japanese vessels fishing off Alaskan coastal waters. He also called attention to the bill he introduced, S. 1816, which would make it possible for any State so desiring to extend the limits for its fishing from 3 to 12 miles. He reinserted a copy of the statement he made on the floor of the Senate on June 28, 1963, which includes the text of the bill itself.

Senator Bartlett (Alaska) on Aug. 14, 1963, presented a statement to the Senate (Congressional Record, pages 14120-14121) on the remarks made by certain Japanese officials on his bill S. 1988. Also included was correspondence sent by Senator Bartlett to the Ambassador of Japan and part of an article by Hanson Baldwin which appeared in the New York Times of Aug. 11, 1963, on the increase of foreign trawler activity in United States territorial waters.

FISHING VESSEL PROTECTION: H. R. 7815 (Pelly) introduced in House July 29, 1963, to aid in the protection of the rights of vessels of the United States engaged in the fisheries and related activities in international waters, and for other purposes; referred to the Committee on Ways and Means. Would impose a prohibition on the importation of fish or fish products from any foreign country which seizes or interferes with American fishing vessel in international waters. This proposed legislation is designed to aid in the protection of the

rights of fishing vessels of the United States engaged in the fisheries and related activities.

HEALTH, EDUCATION, AND WELFARE DEPARTMENT APPROPRIATIONS FY 1964: Labor-Health, Education, and Welfare Appropriations for 1964 (Hearings before the Subcommittee of the Committee on Appropriations, U. S. Senate, 88th Congress, 1st Session, Part I), 1,105 pp., printed. Contains hearings held on the appropriations for the Department of Health, Education, and Welfare for fiscal year 1964; statements of various Federal agencies, members of Congress, members of industry, and additional material and communications submitted for the consideration of the Committee.

S. Rept. 383, Departments of Labor, and Health, Education, and Welfare, and Related Agencies Appropriations Bill, 1964 (Aug. 1, 1963, report from the Committee on Appropriations, U. S. Senate, 88th Congress, 1st Session, to accompany **H. R. 5888**), 89 pp., printed. The Committee reported the bill with various amendments and recommended passage. Included under the appropriations for the Department of Health, Education, and Welfare are funds for Food and Drug Administration; Milk, Food, Interstate and Community Sanitation; and Water Pollution Control.

The Senate on Aug. 7, 1963, passed with amendments, **H. R. 5888**, making appropriations for the Departments of Labor, and Health, Education, and Welfare, and related agencies, for the fiscal year ending June 30, 1964, and for other purposes. Included are funds for Food and Drug Administration; milk, food, interstate and community sanitation; and water pollution control. The milk, food, interstate and community sanitation program assures that only safe water, milk, shellfish and other marine food, and food supplies are served to public; also provides for research and technological assistance programs on shellfish and other marine foods at the two new shellfish sanitation research centers which are to be constructed. The water pollution program provides for regional laboratories located in strategic points throughout the country to promote research and training activities and provide a base of action of State, interstate, and Federal agencies cooperating to eliminate water pollution. Senate insisted on its amendments, asked for conference with House, and appointed Conferees.

IRRADIATION FOOD PROGRAM: Review of the Army Food Irradiation Program (Hearing before the Joint Committee on Atomic Energy, 88th Congress, 1st Session), 545 pp., printed. Contains the hearing held May 13, 1963, on the review of the Army food irradiation program; statements of witnesses and additional material supplied for the record. Included in the additional material is a summary of the Army radiation preservation of food research program. Summary mentions that the Army, AEC, and the National Academy of Sciences plan to sponsor an international conference, on food irradiation in Boston in the late summer of 1964. This conference will be in conjunction with the dedication of the AEC Marine Products Irradiation Facility, Gloucester, Mass. The summary mentions that "Research on the development of radiation sterilized seafoods has continued. Results indicate that the fat content of the raw material may materially affect the storage stability of the finished product. Preliminary data show that fish, low in fat, will have better accept-

ability characteristics after storage (color, flavor, odor, etc.) than those high in fat." Included in the additional material is the report, "Food Preservation by Irradiation in the U.S.S.R."

LATIN AMERICAN COMMON MARKET: Senator Humphrey (Minn.) on Aug. 2, 1963, inserted in the Congressional Record (pp. 13207-13208) a statement on the status of the Central American program of economic integration--the establishment of a Central American Common Market. The five countries participating are: Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua. Included in the statement is an article excerpted from *Latin American Business Highlights*, a quarterly publication of the Chase Manhattan Bank which describes "The Central American Common Market and Country Highlights--Central America."

OCEANOGRAPHIC RESEARCH PROGRAM: The House and the Senate on July 29, 1963, received a letter from the Director, Office of Science and Technology, Executive Office of the President, transmitting, pursuant to law, a report entitled "Oceanography: The 10 Years Ahead"--embodying for the first time the coordinated plans for the decade 1963-72 of the 20 Federal agencies which conduct and sponsor oceanographic research; referred to the House Committee on Merchant Marine and Fisheries and the Senate Committee on Commerce.

H. Rept. 621, Providing for a Comprehensive, Long-Range, and Coordinated National Program in Oceanography, and for Other Purposes (July 31, 1963, report from the Committee on Merchant Marine and Fisheries, House of Representatives, 88th Congress, 1st Session), 13 pp., printed. The Committee favorably reported, with amendment, **H. R. 6997**, to provide for a comprehensive, long-range, and coordinated national program in oceanography, and for other purposes, and recommended passage of the bill. Contains the purpose of the bill, background of the legislation, section-by-section analysis, cost of the legislation, the amendment, departmental reports, and changes in existing law.

The House on Aug. 5, 1963, passed with amendment, **H. R. 6997**. Directs the President to issue a statement of national goals with respect to oceanography and develop a comprehensive program of oceanographic activities and report annually to the Congress on the status of the program and future plans and policies of the United States with respect hereto; survey of all present significant activities, policies, programs, and accomplishments of Federal agencies now engaged in oceanographic work; designation and fixing of responsibility for direction of all oceanographic activities within the Federal Government; and resolving differences arising among Federal agencies in this scientific field. The Senate on Aug. 6, 1963, received the House-passed bill **H. R. 6997**; referred to the Committee on Commerce.

H. R. 7922 (Fascell) introduced in House Aug. 5, 1963, to provide for a comprehensive, long-range, and coordinated national program on oceanography, and for other purposes; referred to the Committee on Merchant Marine and Fisheries.

Representative Wilson (Calif.) on Aug. 6, 1963, inserted in the Appendix of the Congressional Record (pages A5002-A5003) a statement in support of the House-passed bill **H. R. 6997**.

The Appendix (pages A5013) of the Congressional Record, Aug. 6, 1963, included a statement presented to the House by Representative Tollefson (Wash.) on Aug. 5, 1963, giving his support for H. R. 6997.

OCEANOGRAPHIC RESEARCH VESSEL: The Senate on July 29, 1963, received a letter from the Assistant Secretary of the Interior, reporting, pursuant to law, on the research cruise of the research vessel Chain to the equatorial Atlantic and Caribbean, during the period January 1, to June 30, 1963; referred to Committee on Interior and Insular Affairs.

PACIFIC ISLANDS TRUST TERRITORY DEVELOPMENT: The House on July 30, 1963, received from the Committee on Interior and Insular Affairs the report (H. Rept. 605) on H. R. 3198, to promote the economic and social development of the Trust Territory of the Pacific Islands, and for other purposes; with amendment; referred to the Committee of the Whole House on the State of the Union. The section of the bill of particular interest to the Bureau remains unchanged. This language concerns an amendment to existing law which would place the Trust Territory in the same category as insular possessions of the United States so far as importation free of duty into the United States is concerned. There is, however, an exception which would prevent the importation into the United States of fishery products free of duty unless the fish from which the fishery products are made are landed in the Trust Territory from American flag vessels or Trust Territory vessels manned by crews two-thirds of which are citizens of the United States or of the Trust Territory. The House on Aug. 5, 1963, passed, with amendments, H. R. 3198.

PRICE-QUALITY STABILIZATION: Quality Stabilization--1963 (Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, 88th Congress, 1st Session), 465 pp., printed. Contains hearings held April 23, 24, 26; May 14, and 15, 1963, on H. R. 3669, to amend the Federal Trade Commission Act, to promote quality and price stabilization, to define and restrain certain unfair methods of distribution and to confirm, define, and equalize the rights of producers and resellers in the distribution of goods identified by distinguishing brands, names, or trademarks, and for other purposes and identical bills; reports of various agencies; statements of members of Congress, Federal agencies, and industry people; and communications received by the Committee.

H. Rept. 566, Quality Stabilization Act (July 22, 1963, report of the Committee on Interstate and Foreign Commerce, House of Representatives, 88th Congress, 1st Session), 99 pp., printed. The Committee reported favorably and recommended passage, with amendments, of H. R. 3669. Contains the principal purpose of the bill, Committee amendments, background information, need for legislation, paragraph-by-paragraph explanation, appendixes, and minority views.

RESEARCH PROGRAMS: H. Res. 461 (Karth) July 29, 1963; H. Res. 476 (Fraser) Aug. 5, 1963; H. Res. 478 (Tupper) and H. Res. 480 (Fogarty) Aug. 7, 1963; H. Res. 485 (Gross) and H. Res. 489 (Martin) Aug. 12, 1963; and H. Res. 494 (Morse) introduced in House, to create a select committee to investigate expenditures for research programs conducted by or sponsored by the departments and agencies of the Federal Government; re-

ferred to Committee on Rules. Similar or identical to other bills previously introduced in House.

The House Committee on Rules on Aug. 15, 1963, completed hearings on H. Res. 455 and similar resolutions; to create a select committee to investigate expenditures for research programs conducted by or sponsored by the departments and agencies of the Federal Government.

SCIENCE AND TECHNOLOGY OFFICE FOR CONGRESS: S. 2038 (Bartlett) introduced in Senate Aug. 13, 1963, to establish in the legislative branch of the Government a Congressional Office of Science and Technology to advise and assist Members and Committees of the Congress on matters relating to science and technology; referred to Committee on Rules and Administration. The Congressional Office of Science and Technology (COST) will provide a nonpartisan professional source of expert knowledge of science and technology. An office of Science and Technology of the Senate will serve the Senate; an office of Science and Technology of the House of Representatives will serve the House. There will be a director of each office, men of eminent qualification chosen either by the Speaker or the President pro tempore. There will be sufficient assistant directors for the performance of the tasks of the office. It is contemplated that the permanent COST staff will not exceed three or four professional members in either House. The staff will advise and assist, upon request, committees on questions of science and technology; make studies as requested by a committee or House; maintain a register of specialists with talent and wisdom, knowledgeable over the full spectrum of science; prepare reports on events in the scientific field that will be of interest and brought to the attention of several committees. COST will act as a clearinghouse; it would help committees and members find men with experience when needed in the scientific field. If the committee or member wishes to employ the services of the expert, compensation will be paid by the member or committee, not by COST.

H. R. 8066 (Widnall) introduced in House Aug. 14, 1963, to establish in the legislative branch of the Government the Congressional Office of Science and Technology, which shall include an Office of Science and Technology of the Senate, and an Office of Science and Technology of the House of Representatives, which will provide professional services to Members of Congress in the same way that the Office of Legislative Counsel and the liaison offices of the Department of Defense do; referred to Committee on House Administration.

Senator Bartlett (Alaska) presented a statement (Congressional Record, pages 14891-14892) to the Senate Aug. 23, 1963, concerning his bill S. 2038, establishing an Office of Science and Technology for Congress. He presented the names of twelve more sponsors for his bill. He also included several articles on the need for an office of science and technology in Congress.

TUNA VESSEL SEIZURE: Senator Kuchel (Calif.) on Aug. 23, 1963, presented a statement (Congressional Record, pages 14937) on the seizure by Peru on Aug. 19, 1963, of the United States-flag tuna vessels which were fishing approximately 38 miles off the northern coast of Peru.

VESSEL CONSTRUCTION SUBSIDY AMENDMENT: The Subcommittee on Fisheries and Wildlife Conserva-

tion of the House Committee on Merchant Marine and Fisheries held hearings on Aug. 6 and 7, 1963, on H. R. 2172 and H. R. 2643, to amend the Act of June 12, 1960, for the correction of inequities in the construction of fishing vessels, and for other purposes. Testimony was given by Bureau of Commercial Fisheries personnel and various public witnesses.

VOCATIONAL EDUCATION ACT OF 1963: H. R. 4955 (Perkins) introduced in House Mar. 18, 1963, strengthening and improving the quality of vocational education and expanding the vocational educational opportunities in the Nation; referred to Committee on Education and Labor. The bill passed the House on Aug. 6, 1963, and is now pending before the Senate Committee on Labor and Public Welfare. The bill would extend the coverage of the Vocational and Education Act of 1946, as amended, which now permits, among other things, vocational education in the fishery trades. Makes additional Federal funds available for vocational education purposes.

WATER POLLUTION: Water Pollution Control (Hearings before a Special Subcommittee on Air and Water Pollution of the Committee on Public Works, U. S. Senate, 88th Congress, 1st Session), 722 pp.,

printed. Contains hearings held June 17, 18, 19, 20, 25, and 26, 1963, on S. 649, to amend the Federal Water Pollution Control Act, as amended, to establish the Federal Water Pollution Control Administration, to increase grants for construction of municipal sewage treatment works, to provide financial assistance to municipalities and others for the separation of combined sewers, to authorize the issuance of regulations to aid in preventing, controlling, and abating pollution of interstate, or navigable waters, and for other purposes; S. 737, to promote water and air pollution control and abatement by authorizing the Secretary of Health, Education, and Welfare, to provide certain assistance to small business concerns in obtaining necessary treatment works; the statements of various Federal agencies, members of Congress, state and local governments, and interested persons and organizations; agency reports; and communications received by the Committee.

WATER POLLUTION CONTROL ADMINISTRATION: See Water Pollution for hearings held on S. 649.

WATER POLLUTION CONTROL AID TO INDUSTRY: See Water Pollution for hearings held on S. 737.



PLAN TO USE SATELLITES FOR COLLECTION OF OCEANOGRAPHIC DATA

The National Aeronautics and Space Administration has awarded a \$97,000 study contract to Sylvania Electric Products, Inc., for preparation of a plan to use satellites to collect weather and oceanographic data from unmanned weather stations, buoys, and balloons.

Examples of data that might be collected in this way are air temperature, wave height, and ocean current velocity at various depths, the tracking of icebergs, various forms of wildlife, search and rescue, and location of returned spacecraft.

The satellite might interrogate individual stations by means of a code and the information could be stored on magnetic tape in the satellite. Upon command from the ground information would be received at a data retrieval station and distributed to various users.

Hourly collection of data from a world-wide arrangement of stations would permit prompt analysis of contemporary data collected, supplying basic data needed for a better knowledge of many marine conditions and the associated weather. Possible benefits include: better forecasts, improved weather routing of ships, and location of water having temperatures and other characteristics favorable to marine life.

Sylvania Electronic Systems Applied Research Laboratory, Waltham, Mass., will carry out the technical study under the direction of Future Applications Satellites Division, Office of Applications, NASA Headquarters. (Air Weather Service Observer, June 1963.)

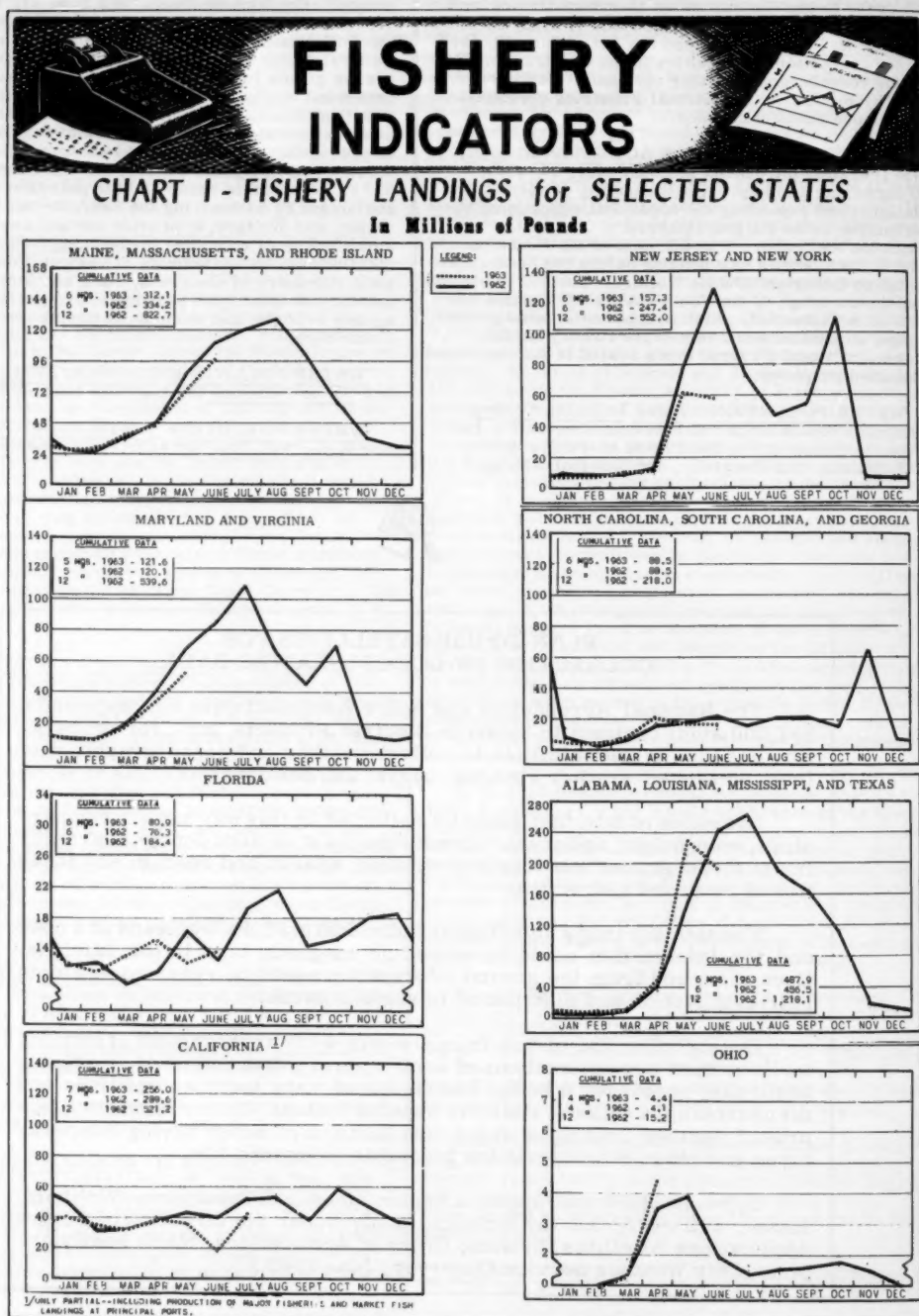
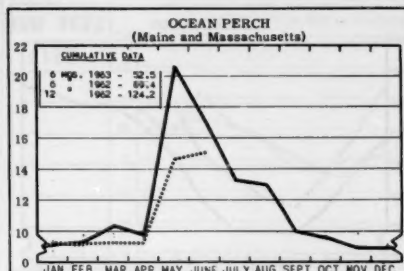
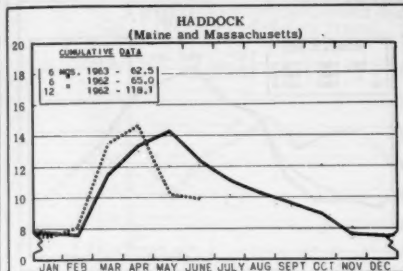
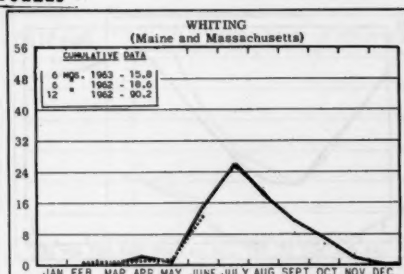
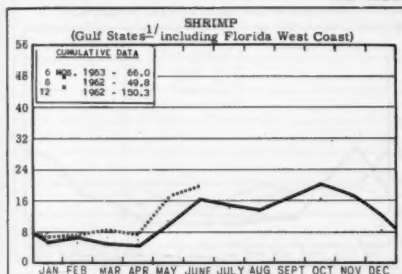


CHART 2 - LANDINGS for SELECTED FISHERIES

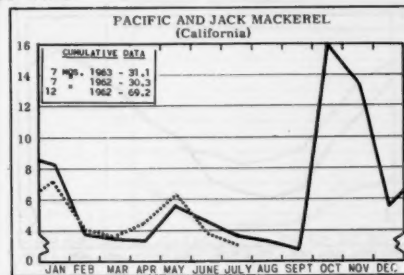
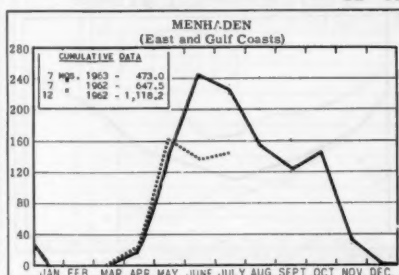
In Millions of Pounds



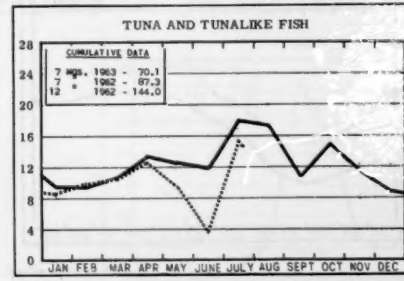
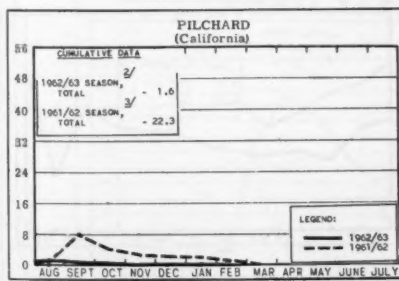
In Millions of Pounds

^{1/}LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons

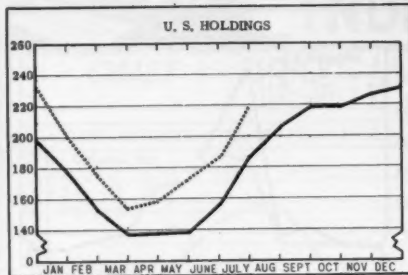


In Thousands of Tons

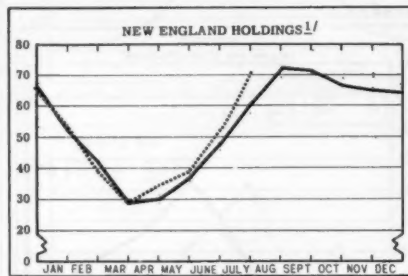
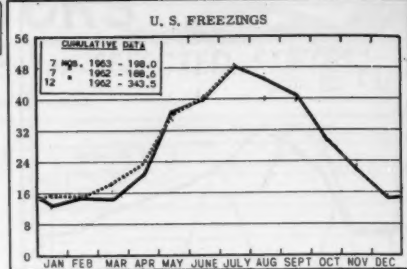


2/SEASON TOTAL, AUG. 1, 1962-FEB. 29, 1963. 3/SEASON TOTAL, AUG. 1, 1961-FEB. 29, 1962.

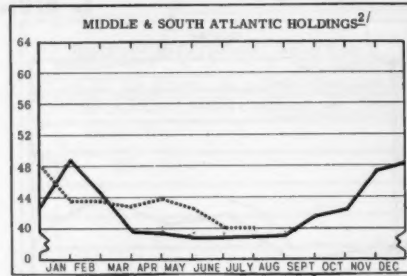
CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHRY PRODUCTS * In Millions of Pounds



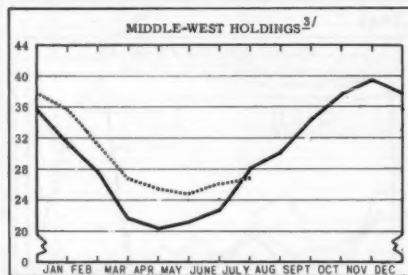
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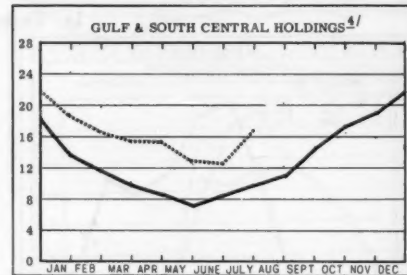
^{1/}MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT



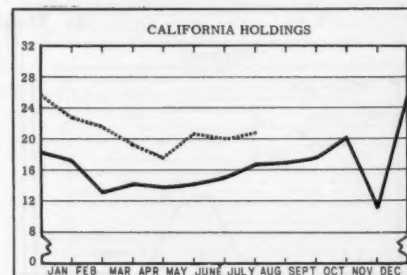
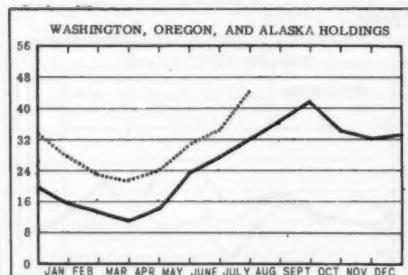
^{2/}ALL EAST COAST STATES FROM N. Y. SOUTH.



^{3/}OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR., & KANS.



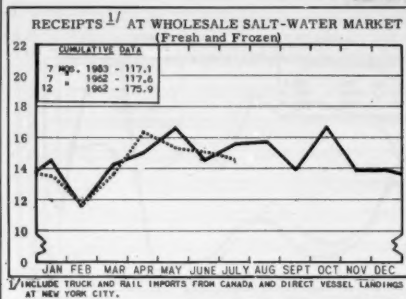
^{4/}ALA., MISS., LA., TEX., ARK., KY., & TENN.



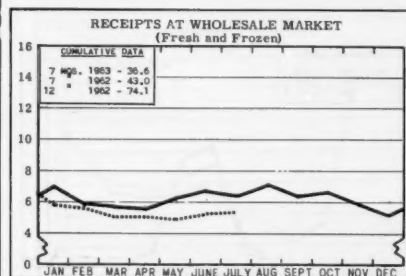
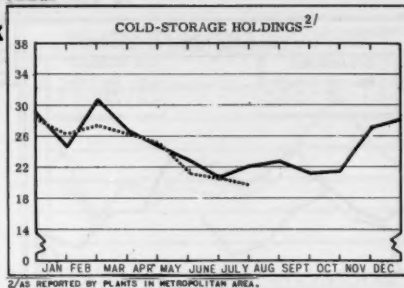
* Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

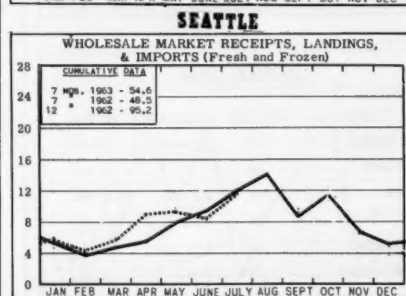
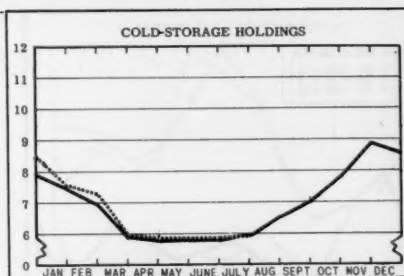
In Millions of Pounds



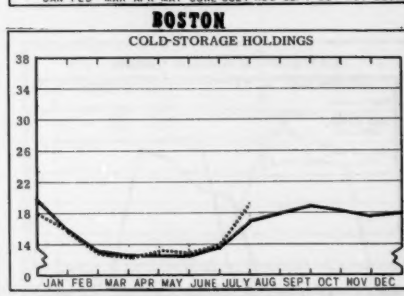
NEW YORK CITY



CHICAGO



SEATTLE



LEGEND:
 1963
 ——— 1962

CHART 5 - FISH MEAL and OIL PRODUCTION

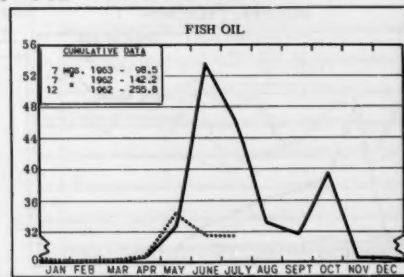
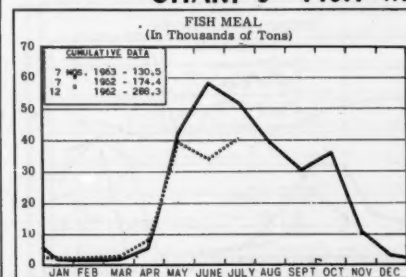
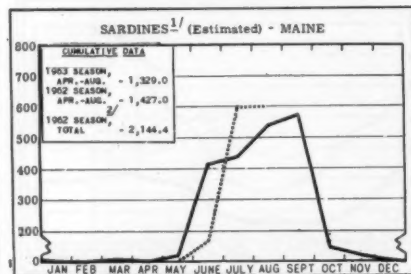
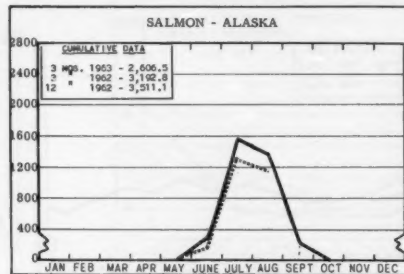
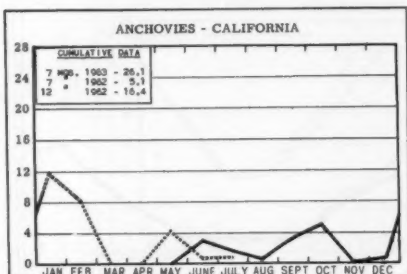
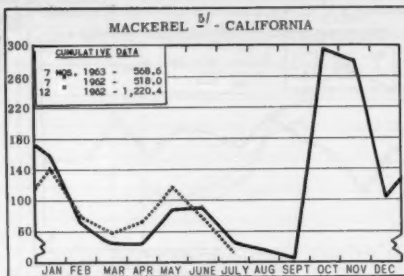
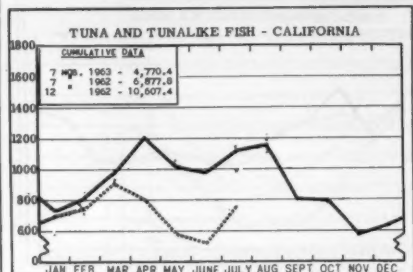


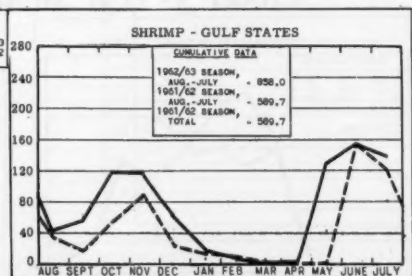
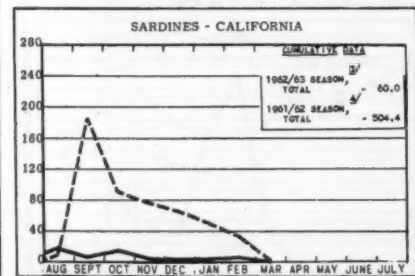
CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	$\frac{1}{2}$ drawn	3 $\frac{1}{2}$ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# $\frac{1}{2}$ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	$\frac{1}{2}$ -lb.	8 oz.

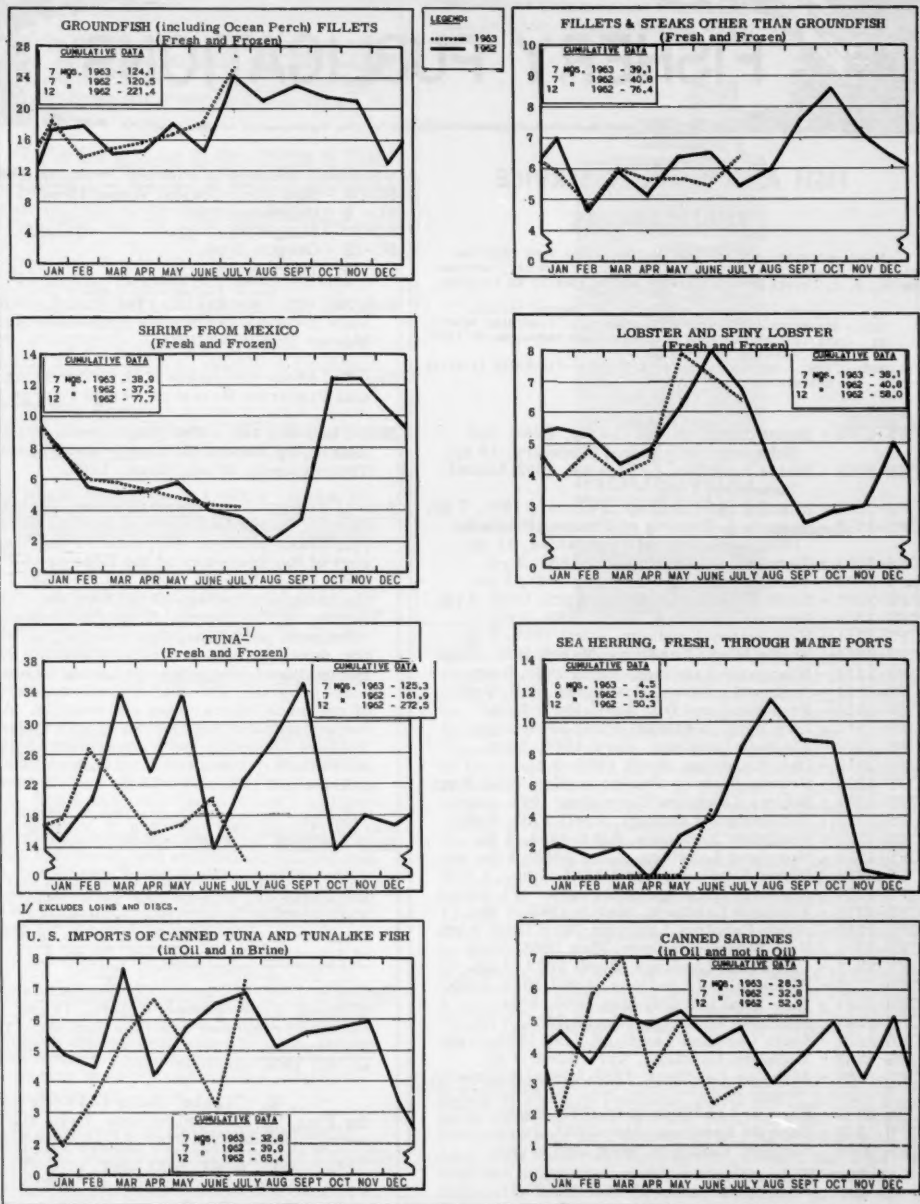


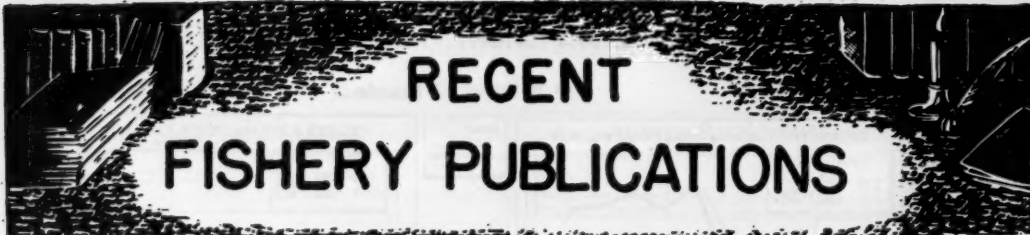
^{3/} SEASON TOTAL, AUG. 1, 1962-FEB. 28, 1963.

^{5/} SEASON TOTAL, AUG. 1, 1961-FEB. 28, 1962.

CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds





RECENT FISHERY PUBLICATIONS

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE OFFICE OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
SL - STATISTICAL LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SSR - FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

Number	Title
CFS-3164	- Maine Landings, by County, Gear, and Subarea, 1962 Annual Summary, 15 pp.
CFS-3168	- Maine Landings, by Months, 1962 Annual Summary, 7 pp.
CFS-3181	- Mississippi Landings, February 1963, 3 pp.
CFS-3185	- Imports & Exports of Fishery Products, 1958-1962, Annual Summaries, 11 pp.
CFS-3203	- Texas Landings, January 1963, 3 pp.
CFS-3204	- Texas Landings, February 1963, 3 pp.
CFS-3207	- South Carolina Landings, April 1963, 3 pp.
CFS-3209	- Georgia Landings, April 1963, 3 pp.
CFS-3211	- New Jersey Landings, April 1963, 3 pp.
CFS-3212	- Rhode Island Landings, March 1963, 3 pp.
CFS-3213	- Wisconsin Landings, April 1963, 2 pp.
CFS-3214	- Shrimp Landings, November 1962, 8 pp.
CFS-3216	- Fish Meal and Oil, April 1963, 2 pp.
CFS-3217	- New York Landings, April 1963, 4 pp.
CFS-3218	- Virginia Landings, April 1963, 3 pp.
CFS-3219	- Ohio Landings, April 1963, 3 pp.
CFS-3220	- Frozen Fishery Products, May 1963, 8 pp.
CFS-3221	- Shrimp Landings, December 1962, 8 pp.
CFS-3222	- Mississippi Landings, April 1963, 3 pp.
CFS-3223	- Louisiana Landings, April 1963, 2 pp.
CFS-3224	- Maryland Landings, April 1963, 3 pp.
CFS-3225	- Maine Landings, April 1963, 4 pp.
CFS-3226	- Alabama Landings, February 1963, 3 pp.
CFS-3227	- Alabama Landings, March 1963, 3 pp.
CFS-3230	- North Carolina Landings, May 1963, 4 pp.
CFS-3231	- New Jersey Landings, May 1963, 3 pp.
CFS-3232	- California Landings, April 1963, 4 pp.
CFS-3233	- Rhode Island Landings, April 1963, 3 pp.
CFS-3234	- Fish Meal and Oil, May 1963, 2 pp.
CFS-3235	- Michigan Landings, March 1963, 3 pp.
CFS-3237	- South Carolina Landings, May 1963, 3 pp.
CFS-3238	- Michigan Landings, April 1963, 3 pp.
CFS-3239	- Alabama Landings, 1962 Annual Summary, 5 pp.
CFS-3241	- Florida Landings, May 1963, 8 pp.
CFS-3242	- Georgia Landings, May 1963, 3 pp.
CFS-3245	- Virginia Landings, May 1963, 3 pp.

Wholesale Dealers in Fishery Products, 1962 (Revised):

SL- 6 - New York Coastal Area, 10 pp.
SL- 9 - Delaware, 1 p.
SL-10 - Maryland, 10 pp.
SL-22 - Oregon, 3 pp.
SL-23 - Washington, 7 pp.

Sep. No. 683 - Mechanizing the Blue Crab Industry - Part II - Measures for the Immediate Relief Through Worker Specialization.

Sep. No. 684 - Activation of U.S. Bureau of Commercial Fisheries Research Vessel George B. Kelez.

SSR-Fish, No. 440 - The King Salmon of Cook Inlet, Alaska, by Robert M. Yancey and Fredrik V. Thorsteinson, 22 pp., illus., 1963.

Annual Report of the Commissioner, Fish and Wildlife Service, to the Secretary of the Interior, 1962, 63 pp., illus., printed. (Reprinted from the Annual Report of the Secretary of the Interior, for the Fiscal Year ended June 30, 1962, pp. 265-323.) Summarizes the various activities of the Service. Describes the Bureau of Commercial Fisheries research and development programs, conferences, services to industry, developments in foreign fisheries and trade, international programs, Columbia River development program, fur-seal operations, and construction of research laboratories and vessels. Also covers the activities of the Bureau of Sport Fisheries and Wildlife, including the management of wildlife and sport fishery resources, wildlife and fishery research, and fish and wildlife and outdoor recreation.

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE AVAILABLE ONLY FROM THE U. S. BUREAU OF COMMERCIAL FISHERIES BIOLOGICAL LABORATORY, BOX 3830, HONOLULU, HAWAII.

An Observation on a School of Skipjack and Kimeji Accompanying a Drift Log, by Hiroshi Yabe and Tokumi Mori, 8 pp., illus., processed. (Translated from the Japanese, Bulletin of the Japanese Society of Scientific Fisheries, vol. 16, no. 2, 1950, pp. 35-39.)

Studies of Dolphin Fishing Conditions in the Western Sea of Japan, I, by Shumpei Kojima, 11 pp., illus., processed. (Translated from the Japanese, Bulletin of the Japanese Society of Scientific Fisheries, vol. 20, no. 12, 1955, pp. 1044-1049.)

II--"Tsuke" Rafts and their Attraction for the Fish, by Shumpei Kojima, 7 pp., illus., processed. (Translated from the Japanese, Bulletin of

the Japanese Society of Scientific Fisheries, vol. 21, no. 10, 1956, pp. 1049-1052.)

III--On the Stomach Contents of Dolphin, by Shumpei Kojima, 8 pp., illus., processed. (Translated from the Japanese, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, no. 7, 1961, pp. 625-629.)

V--On the Species of Fish Attracted to "Tsuke" Rafts, by Shumpei Kojima, 4 pp., processed. (Translated from the Japanese, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, no. 4, 1960, pp. 379-382.)

VI--On the Ecology of the Groups of Fish Congregating Around "Tsuke" Rafts, by Shumpei Kojima, 10 pp., illus., processed. (Translated from the Japanese, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, no. 4, 1960, pp. 383-388.)

Studies of Drifting Sea Weeds: Larval and Juvenile Fishes Accompanying Drifting Sea Weed, I--Investigations in the Vicinity of Tsuyazaki in Fiscal Year 1957, by Keitaro Uchida and Yoichi Shojima, 7 pp., illus., processed. (Translated from the Japanese, Bulletin of the Japanese Society of Scientific Fisheries, vol. 24, nos. 6 and 7, 1958, pp. 411-415.)

Underwater Fisheries Research in the U.S.S.R., by V. I. Zaitsev, 11 pp., illus., processed. (Translated from the Russian, Okeanologia, vol. 2, no. 6, 1962, pp. 961-969.)

THE FOLLOWING ENGLISH TRANSLATION OF A FOREIGN LANGUAGE ARTICLE IS NOT FOR GENERAL DISTRIBUTION BUT IS AVAILABLE FOR REFERENCE ONLY FROM THE BIOLOGICAL LABORATORY, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, P. O. BOX 3930, HONOLULU, HAWAII.

On Estimating Tuna Fishing Condition in the North Pacific Ocean, by Akira Suda, 7 pp., processed. (Translated from the Japanese, Tuna Fishing, no. 54, November 10, 1958, pp. 27-31.)

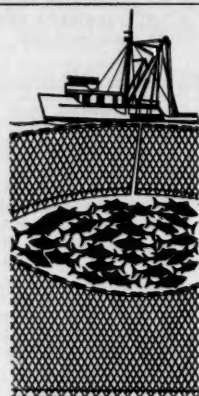
THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, May and June 1963, 16 pp., each. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., Room 208, San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; for the months indicated.

California Fishery Market News Summary, Part II - Fishing Information, June 1963, 8 pp., illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6317, Pt. Loma Station, San Diego 6, Calif.) Contains sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists; for the month indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, June 1963, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, U. S. Customs House, 610 S. Canal St., Room 1014, Chicago 7, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and weekly wholesale prices for fresh and frozen fishery products; for the month indicated.

Fishery Industrial Research, vol. 2, no. 1, September 1962, 61 pp., illus., processed. (Branch of Reports, Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Washington 25, D. C.) This is the second



**FISHERY
INDUSTRIAL
RESEARCH**

VOLUME 2 NO. 1

United States
Department of the Interior
Fish and Wildlife Service
Bureau of Commercial Fisheries

issue of a new periodical which will be published irregularly and will present papers devoted to research on problems of the fishing industry. Includes articles on: "Quality Changes in Whiting Stored in Ice as Indicated by Organoleptic and Objective Tests," by Joseph M. Mendelsohn and John A. Peters; "Effect of Cooking Methods on the Sodium Content of Halibut, Haddock, and Flounder," by Bernard I. Sohn and Maynard A. Steinberg; "Proximate Composition Changes in Sockeye Salmon (*Oncorhynchus nerka*) during Spawning Migration," by Claude E. Thurston and H. William Newman; "Mechanically Deicing and Weighing Groundfish at the Dock in New England," by John A. Peters, Joseph W. Slavin, and Arvey H. Linda; "Methods of Separation of Fatty Acids from Fish Oils with Emphasis on Industrial Applications," by Edward H. Gruger, Jr.; "Storage of Fish in Refrigerated Sea Water. I--Quality Changes in Ocean Perch as Determined by Organoleptic and Chemical Analyses," by Edward H. Cohen and John A. Peters; "New-Type Multiple Debrader," by Melvin E. Waters and D. J. Bond.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, April and May 1963, 8 pp. each. (Market News Service, U. S. Fish and Wildlife Service, Room 609, 600 South St., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market;

fishery imports at Port Isabel and Brownsville, Texas, from Mexico; and sponge sales; for the months indicated.

Japan-Soviet Private Kelp Fishery Agreement, 6 pp., illus. (Bureau of Commercial Fisheries, U.S. Fish and Wildlife Service, 101 Seaside Ave., Terminal Island, Calif.) Japan and the Soviet Union concluded a private kelp fishery agreement on June 10, 1963. Events leading to the conclusion of this agreement are described. A full translation of the text of the private agreement is also included.

New England Fisheries--Monthly Summary, June 1963, 21 pp. (Market News Service, U.S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Review of the principal New England fishery ports. Presents data on fishery landings by ports and species; industrial-fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and Boston Fish Pier and Atlantic Avenue fishery landings and ex-vessel prices by species; for the month indicated.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, June 1963, 9 pp. (Market News Service, U.S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle 4, Wash.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of other-trawl vessels as reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; imports from other countries through Washington customs district; for the month indicated; and Alaska Canned Salmon Pack--1962-1963.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

*ANY LISTED PUBLICATION PRECEDED BY AN ASTERISK IS AVAILABLE ON LOAN FROM THE NATIONAL LENDING LIBRARY FOR SCIENCE AND TECHNOLOGY, D. S. 1. R., BOSTON SPA, YORKSHIRE, ENGLAND.

ABALONE:

"Chemical Studies on the Meat of Abalone. II--(Halotis discus Hannai) Detection of Mucoprotein in and Decomposition of Abalone Meat," by Eiichi Tanikawa, Minoru Akiba, and Jiro Yamashita, article, Bulletin of the Faculty of Fisheries, Hokkaido University, vol. 12, February 1962, pp. 293-308, printed. Hokkaido University, Kameda-Machi, Hokodate, Japan.

ALASKA:

Alaska Commercial Fishery Operators, 1962, Statistical Leaflet No. 4, 17 pp., illus., printed. Department of Fish and Game, Support Bldg., Juneau, Alaska.

Alaska Fishery Operators, 1961, Statistical Leaflet No. 2, 16 pp., printed. Department of Fish and Game, Support Bldg., Juneau, Alaska.

ALGINATES:

"Alginates from Seaweed," by E. R. Webber, article, Food Manufacture, vol. 37, July 1962, pp. 328-330, printed. Leonard Hill Ltd., 9 Eden Street, London, NW1, England.

"Studies on Alginase. IV--Investigation of Reactivities," by Isami Tsujino and Tsuneyuki Saito, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 29, no. 1, January 1963, pp. 58-65, illus., printed in Japanese with summary in English. Japanese Society of Fisheries, Shiba Kaigandori 6, Minato-ku, Japan.

AQUATIC PLANTS:

Control of Aquatic Plants, by Frederick A. Meyer, Inland Fisheries Informational Leaflet No. 18, 5 pp., illus., processed. California Department of Fish and Game, Inland Fisheries Branch, 722 Capitol Mall, Sacramento 14, Calif., revised May 1963. A leaflet designed to aid the pond owner with an aquatic plant problem in his efforts to control these plants. Discusses infestations by and treatment of algae, microscopic plants which give water its green color; submergents, growths rooted in the bottom and normally having all of their parts under water; and emergents, plants rooted in the bottom with some parts well above water or floating on the surface.

AUSTRALIA:

"Parasitic Copepoda from Australian Waters," by Poul Heegaard, article, Records of the Australian Museum, vol. 24, no. 9, 1962, pp. 147-233, illus., printed. Australian Museum, Sydney, Australia.

AUSTRIA:

Establishing a Business in Austria, OBR-63-99, 20 pp., printed, 15 cents. Bureau of International Commerce, U.S. Department of Commerce, Washington, D. C., April 1963. (For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C.) Summarizes the relevant Austrian policies and regulations in the fields of investment, business organization, employment, taxation, export promotion, trade license requirements, and other matters affecting the establishment and operation of business enterprises by non-Austrian nationals.

BALTIC SEA:

Salmon and Porpoise in the Baltic; Preliminary Communication, by Arne Lindroth, no. 6, 5 pp., illus., printed. Salmon and Trout Committee, International Council for the Exploration of the Sea, Charlottenlund-Slot, Denmark, 1961.

BYPRODUCTS:

"The Utilization of Fish Skins for Glue and Other Products," by A. Guttman, article, Progress Reports of the Atlantic Coast Stations, No. 73, August 1962, pp. 3-10, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

CALIFORNIA:

"Commercial Freshwater Fisheries of California," by Sterling P. Davis, article, California Fish and Game, vol. 49, no. 2, April 1963, pp. 84-84, illus., printed, single copy 75 cents. California Department of Fish and Game, Printing Division, Documents Section, Sacramento 14, Calif.

CAMBODIA:

"Fish and Water in Cambodia," by K. Krishna Moorthy, article, Far Eastern Economic Review, vol. XL, no. 7, May 1963, pp. 375-377, illus., printed. Far Eastern Economic Review, Ltd., 412 Marina House, Hong Kong.

CANADA:

Fisheries Council of Canada, Annual Review 1963, 79 pp., illus., printed. Fisheries Council of Canada, Room 703, 77 Metcalfe Street, Ottawa 4, Canada. Includes, among others, the following articles: "High Seas Salmon Research," by Roy I. Jackson; "Canada's National and Territorial Waters;" "The Scallop Industry," by G. J. Gillespie; and "Fisheries Policy in the European Common Market," by P. T. Eastham.

32nd Annual Report, 1961, Department of Fisheries, Cat. No. Fs 1-1961, 156 pp., illus., printed, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, 1963. Presents an account of the functions and activities of the Department of Fisheries for the year 1961, and the financial statements of the Department for the fiscal year 1961/62. Covers in detail the work of the Department's Conservation and Development, Inspection, Economics, Information and Consumer, and Industrial Development Services. Also covers activities of departmental vessels, the Fishermen's Indemnity Plan, Fisheries Prices Support Board, Fisheries Research Board of Canada, international commissions, and special commissions. Canada's Pacific Coast, Lakes, and Atlantic Coast fisheries are also discussed. Statistics cover the quantity and value of fish and shellfish landed, exports by types of products, number of fishermen in Canada, and value of fishing craft and gear. The appendix contains financial statements, and reports on fish culture development.

CANNING:

"Oversikt over den Danske Fiskehelkonserverindustri" (Survey of the Danish Fish Canning Industry), by Hakon Nielsen, article, Tidsskrift for Hermetikkindustri, vol. 49, no. 5, May 1963, pp. 190-192, 194-195, printed in Norwegian. Norske Hermetikfabrikker Landsforening, Stavanger, Norway.

CARIBBEAN SEA:

Association of Island Marine Laboratories, Fourth Meeting, 32 pp., illus., processed. Universidad de Puerto Rico, Oficina de Informacion y Publicaciones, Seccion de Impresos, Mayaguez, Puerto Rico. Contains papers presented at the fourth meeting of the Association of Island Marine Laboratories, sponsored by the Carabiach Marien Biologisch Instituut, held in Curacao, Netherlands Antilles, November 18-21, 1962.

Discontinuity in Marine Fish Distribution in the Caribbean, by Donald S. Erdman, 5 pp., printed. (Re-

printed from Caribbean Agriculture, vol. 1, no. 2, March 1963, pp. 127-131.) Estado Libre Asociado de Puerto Rico, Departamento de Agricultura, San Juan, Puerto Rico.

CARRAGEENAN:

Genu Carrageenan, 35 pp., illus., printed. A/S Kobenhavns Pektinfabrik (The Copenhagen Pectin Factory Ltd.), Lille Skensved, Denmark. Carrageenan is an extract of the red seaweeds, Chondrus crispus and Gigartina stellata, although the name is often given to extracts from types of Euchema and Iridea. The extracts are stabilizing, gelling, and viscosity increasing substances widely used in foods. The booklet describes the assumed molecular structure of carrageenan, the average composition, chemical and physical characteristics, analytical and test methods, and the evaluation of gels made with carrageenan using 4 instruments--the Ridgelmeter, the Bloom gelometer, the Gelometer, and the FIRA tester. An attached leaflet entitled "Fish in Jelly," describes the gels available and how to prepare and use them.

CEYLON:

Administration Report of the Director of Fisheries for 1960-61, Part IV--Education, Science and Art (L), 65 pp., printed in Ceylonese and English, 2/30 (about 50 U.S. cents). Government Publications Bureau, P.O. Box 500, Colombo, Ceylon. Report on the activities and accomplishments of the Ceylon Department of Fisheries for 1960/61. Includes, among other data, information on programs of the organization; disputes and regulations; benefits for fishermen; fishery loans; coastal navigation aids; and fishing harbors. It covers fresh- and brackish-water fisheries; pearl fisheries; fish factory at Mutwal; cooperative fish sales union; and fishery research. Also contains statistical tables on imports and exports of fish and fishery products; and production of fresh and cured fish for 1960/61.

CHESAPEAKE BAY:

Atlas of Salinity and Temperature Distributions in Chesapeake Bay 1952-1961 and Seasonal Averages 1940-1961, by E. D. Stroup and R. J. Lynn, Graphical Summary Report 2, Reference 63-1, 417 pp., illus., processed. Chesapeake Bay Institute, The Johns Hopkins University, Baltimore, Md., February 1963.

CLAMS:

"A New Digger for Soft-Shell Clams," by J. S. MacPhail and J. C. Medcof, article, Trade News, vol. 15, no. 9, March 1963, pp. 3-5, illus., processed. Director of Information and Consumer Service, Department of Fisheries, Ottawa, Canada. Describes a new hydraulic clam digger, its operation, and commercial fishing trials. Also discusses hydraulic digging and the future of the clam fishery.

COD:

"Merkforsøk på brisling i fjorder på Vestlandet, 1961-1962" (Tagging of Cod in the Western Bay, 1961-1962), by Kaare R. Gundersen, article, Fiskets Gang, vol. 49, no. 21, May '63, 1963, pp. 300-304, printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuple 10, Bergen, Norway.

"Salt-Fish Flavour in Frozen Cod Fillets Prepared from Stored Frozen Shore Cod Thawed in Sea Water," by W. J. Dyer and others, article, Progress

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Reports of the Atlantic Coast Stations, No. 73, August 1962, pp. 17-19, printed, Queen's Printer and Controller of Stationery, Ottawa, Canada.

COLD STORAGE:

"Physical and Chemical Changes in Fish Muscle during Cold Storage," by Hans Buttkus and H. L. A. Tarr, article, *Food Technology*, vol. 16, August 1962, pp. 84-88, printed, The Garrard Press, 510 North Hickory, Champaign, Ill.

COMMERCIAL FISHERIES BUREAU OF:

"B. C. F., 1961 Activities--Worldwide in Scope," by Donald L. McKernan, article, *Fishing Gazette*, Annual Review Number, vol. 79, pp. 18-24, printed, Fishing Gazette Publishing Corp., 461 8th Ave., New York 1, N. Y.

CONVENIENCE FOODS:

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DIRECTORIES:

World Fishing Guide, 1963, 155 pp., illus., printed in English, German, and Spanish, 60 s. (about US\$8.40). John Trundell and Partners Ltd., St. Richard's House, Eversholt St. London NW1, England. An International commercial fishing service covering Australia, Austria, Belgium, Canada, Denmark, Finland, France, Holland, Italy, Japan, Norway, Portugal, South Africa, Spain, Sweden, Switzerland, United Kingdom, United States, and West Germany. Consists of 2 directories: the first for manufacturers of fishing gear and equipment; the other for fishing vessel builders. The manufacturers are listed alphabetically by type of product under 239 headings, grouped under country of manufacture. The builders are presented alphabetically by countries. A product index makes it easy to locate the manufacturer of any particular item. The principal objective of this guide is to supply a multi-language directory of the gear and equipment made throughout the world for use by the commercial fishing industry. The publishers have concentrated in particular on the most important items of fishing equipment,

such as nets, winches, and fish-finding equipment.

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"Chemical and Biological Evaluation of Some Protein Feeds for Poultry," by I. Ascarelli and B. Gestetner, article, Journal of the Science of Food and Agriculture, vol. 13, August 1962, pp. 401-410, printed. The Society of Chemical Industry, 14 Belgrave Sq., London SW1, England.

"Maine Studies Value of Fish, Fermentation Products for Broilers," article, Feedstuffs, vol. 34, September 8, 1962, p. 64, printed. Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

FISH BAIT:

"Fish Preservation Inquiries. The Preservation of Fish Bait" (Parts 1 and 2), by W. A. Montgomery and A. R. Prater, articles, Fisheries Newsletter (Australia), vol. 21, no. 7, July 1962, p. 17; and vol. 21, no. 8, August 1962, p. 17, printed. Commonwealth Fisheries Office, Department of Primary Industry, Canberra, Australia.

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Tuna: As You Like it, 23 pp., illus., printed. Tuna Research Foundation, Dept. 300, Ferry Bldg., Terminal Island, Calif., 1963. A color-illustrated leaflet offering tuna recipes and information. Presents the history of tuna canning, the species of tuna used commercially, 39 tuna recipes, the nutritional value of tuna, the tuna fishermen and their fishing methods, how tuna is canned, and styles of pack. Included are recipes for casseroles, salads, sandwiches, soups, and appetizers.

FISH CULTURE:

Fish Culture: Its History and Techniques, by C. F. Hickling, 295 pp., printed. Faber & Faber Ltd., 23-24 Russell Sq., London WC1, England, 1962.

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principles are the same in all areas but methods must be adapted to the conditions peculiar to a particular area. It is not enough to transfer a system of fish culture from one area to another area with completely different environmental requirements."

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FISH OIL:

"Air Blowing of Cod-Liver Oil and other Marine Oils," by P. M. Jangaard and R. G. Ackman, article, Journal of the Fisheries Research Board of Canada, vol. 19, September 1962, pp. 839-849, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

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"Researchers Move Closer to Identification of Unknown Factor," article, Feedstuffs, vol. 34, September 22, 1962, p. 87, printed. Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

"Solubles de pescado" (Fish Solubles), by Manuel Lopez Benito, article, Puntal--Revista Marítima y Pesquera, vol. X, no. 107, February 1963, pp. 2-5, illus., processed. Puntal--Revista Marítima y Pesquera, Ramon y Cajal 3, Apartado 316, Alicante, Spain.

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FISH TRANSPORTATION:

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Import Tariff System of France, OBR-63-97, 2 pp., printed, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C., December 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Presents information on units of currency, weights, and measures; bases of specific and ad valorem duties; method of duty payment; preferential duties; sales and other internal taxes; import restrictions; other special regulations; and related subjects.

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"Freeze-Drying Moves Ahead in U. S.," by John F. Maguire, article, Food Engineering, vol. 34, August 1962, pp. 54-56, printed. Chilton Co., Chestnut and 56th Sts., Philadelphia 36, Pa.

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Pacific Halibut Fishery Regulations (Effective June 8, 1963), 12 pp., printed, International Pacific Halibut Commission, Fisheries Hall No. 2, University of Washington, Seattle 5, Wash. The revised regulations (effective June 8, 1963) for the North Pacific halibut fishery were published in conformity with the Pacific Halibut Fishery Convention between the United States and Canada, signed March 2, 1953. The new regulations cover the regulatory areas, length of halibut fishing seasons, closed seasons, catch limits in Areas 2, 3A and 3B North Triangle, size limits, licensing of vessels, retention of halibut taken under permit, conditions limiting validity of permits, statistical return by vessels, statistical return by dealers, dory gear prohibited, retention of halibut taken by nets, retention of tagged halibut, responsibility of master, supervision of unloading and weighing, sealing of fishing equipment, and previous regulations superseded. The revised regulations supersede those already published which became effective on March 21, 1963. They are concerned primarily with division of Area 3B North into two areas (Area 3B North and Area 3B North Triangle), but many other changes in wording and

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Review of the Hawkfishes (Family Cirrhitidae), by John E. Randall, Contribution No. 409, 79 pp., illus., printed, (Reprinted from *Proceedings of the United States National Museum*, vol. 114, no. 3472, 1963, pp. 389-451.) Smithsonian Institution, Washington, D. C.

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West Caroline Islands," by Teruo Sato, Shoichi Yamamoto, and Motokazu Ueno; "On the Populations of the Japanese Anchovy, *Engraulis japonica* (Houttuyn), Caught in Tsugaru Strait and Funka Bay," by Tetsuichiro Kinoshita; "Study on the Suitable Mesh Size for Salmon Gill-Net with Results of Measurement of Netted Fish," by Shoichi Yamamoto and Seikichi Mishima; "Study on the Tuna Long-Line Fishing Ground of the South off the Island of Java," by Kenji Shimazaki, Kiyotaka Otani, and Seikichi Mishima; "Lipids of Salmonoid Fishes. V--Acetone-Soluble Lipid from Dark-Colored Muscle of Dog Salmon, *Oncorhynchus keta*," and "VI--Conjugated Lipids from Dark-Colored Muscle of Dog Salmon, *Oncorhynchus keta*," by Mustsuo Hatano and others.

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International Fisheries Co-operative Organization, 1963, No. 15, 38 pp., illus., printed in Japanese. International Fisheries Co-operative Organization, P. O. Box 272, Tokyo Central Post Office, Tokyo, Japan.

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"A Chemical Investigation of the Lamprey Eel Venom," by Michael F. Farona, Thomas R. Sweet, and William M. MacNevin, article, Archives of Biochemistry and Biophysics, vol. 98, August 1962, pp. 245-248, printed. Academic Press Inc., 111 5th Ave., New York 3, N. Y.

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Annual Report 1962, 74 pp., illus., printed. Woods Hole Oceanographic Institution, Woods Hole, Mass. Presents the Director's report, including accounts of programs and accomplishments of the departments of Applied Oceanography, Biology, Chemistry and Geology, Geophysics, Physical Oceanography, and Theoretical Oceanography and Meteorology. Also includes information on additions and improvements to facilities, major cruises of vessels, publications issued, and other related subjects.

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Data (Oceanography Issue), vol. 8, no. 5, May 1963, 71 pp., illus., printed, Data Publications, 1808 Wisconsin Ave., NW., Washington 7, D. C. Contains an editorial, "Understanding the Sea Environment," by James H. Wakelin, Jr.; and features activity reports concerning oceanographic research programs, their progress, and plans for the future. Also contains an article on "Oceanographic Needs," by Peter Hackes.

A Doppler Current Meter, by F. F. Koczy, M. Kronengold, and J. M. Loewenstein, Contribution No. 421, 8 pp., illus., processed, (Reprinted from Marine Sciences Instrumentation, vol. 2, 1963, pp. 127-133.) The Marine Laboratory, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

Renewal Time of Bottom Water in the Pacific and Indian Oceans, by F. Koczy and B. Szabo, Contribution No. 401, 10 pp., illus., printed, (Reprinted from Journal of the Oceanographical Society of Japan, 20th Anniversary Volume, 1962, pp. 590-599.) The Marine Laboratory, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

Ripple Marks Show that Countercurrent Exists in Florida Straits, by Robert J. Hurley and L. Kenneth Fink, 2 pp., illus., printed, (Reprinted from Science, vol. 139, no. 3555, February 15, 1963, pp. 603-605.) The Marine Laboratory, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

A Water Sampler for Microbiological Studies, by Shale J. Niskin, Contribution No. 428, 5 pp., illus., printed, (Reprinted from Deep-Sea Research, vol. 9, 1962, pp. 501-503.) The Marine Laboratory, 1 Rickenbacker Causeway, University of Miami, Miami 49, Fla.

OREGON:

Rock, Surf and Bay Fishes of Oregon, Information Leaflet No. 14, 4 pp., illus., printed, Information-Education Division, State Game Commission, Portland, Oreg., 1961.

OYSTERS:

"Fish and Other Marine Products. The Government Industry Cooperative Oyster Research Program. Part II--Native Oysters Studies," by Amihud Kramer and others, article, Journal of the Association of Official Agriculture Chemists, vol. 45, August 1962, pp. 565-577, printed, Association of Official Agriculture Chemists, P. O. Box 540, Benjamin Franklin Station, Washington 4, D. C.

Handbook for Oyster-Farmers, Division of Fisheries, Circular No. 3, 23 pp., illus., printed, Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia, 1954.

"Oyster Farming," by J. M. Thomson, article, South Pacific Bulletin, vol. 13, no. 2, April 1963, pp. 50-52, illus., printed, single copy 30 cents. South Pacific Commission, Box 5254, G. P. O., Sydney, Australia.

PARASITES:

Alaskan Species of Acanthocephalan Genus CORYNOSOMA Luehe, 1904, by Kenneth A. Neiland, 7 pp.,

illus., printed, (Reprinted from The Journal of Parasitology, vol. 48, no. 1, February 1962, pp. 69-75.) Division of Biological Research, Alaska Department of Fish and Game, Juneau, Alaska.

Helminth Parasites of Antarctic Vertebrates. Part I--Digenetic Trematodes of Marine Fishes, by Mitchell A. Byrd, Contribution No. 122, 20 pp., illus., printed, (Reprinted from the Proceedings of the Helminthological Society of Washington, vol. 30, no. 1, January 1963, pp. 129-148.) Virginia Institute of Marine Science, Gloucester Point, Virginia.

PEARL SHELL:

"M. O. P. Shell Production Down 9 P. C.," article, Fisheries Newsletter, vol. 22, no. 5, May 1963, pp. 17, 27, illus., printed, Commonwealth Director of Fisheries, Department of Primary Industry, Canberra, Australia.

PERU:

El Desarrollo de la Pesqueria en el Peru--Symposium Organizado por la Facultad de Zootecnia de la Universidad Agraria, Lima, 5 a 10 de Noviembre de 1962 (The Development of the Fishing Industry in Peru--Symposium Organized by the Faculty of Zootechnics of the Agrarian University, Lima, November 5-10, 1962), 195 pp., illus., printed in Spanish, Departamento de Publicaciones, Universidad Agraria, Lima, Peru, 1963. Contains articles on: "Desarrollo de la Industria Pesquera" (Development of the Fishing Industry), by R. Lecca P.; "La Oceanografia al Servicio de la Pesca en el Peru" (Oceanography at the Service of the Peruvian Fishery), by Z. Popovici; "Situacion Economica de la Pesqueria Peruana" (Economic Condition of the Peruvian Fishing Industry), by J. Iparraguirre; "Veinte Anos de Construcion de Embarcaciones Pesqueras de el Peru" (Twenty Years of Fishing Vessel Construction in Peru), by S. Villanueva; "Biologia Marina y Pesqueria" (Marine Biology and the Fishing Industry), by M. Vegas V.; "Nociones Basicas acerca de la Elaboracion de Harina de Pescado" (Basic Ideas Concerning the Processing of Fish Flour), by T. Sparre; "Bases para el Desarrollo de una Politica Pesquera Peruana" (Bases for the Development of a Peruvian Fishery Policy), by J. Bravo B.; "Factores que Afectan la Calidad de la Harina de Pescado" (Factors Which Affect the Quality of Fish Flour), by L. Ousterhout; "La Pesqueria y la Alimentacion de Ganado" (The Fishing Industry and the Feeding of Livestock), by A. Bacigalupo; "La Pesqueria y la Alimentacion Humana" (The Fishing Industry and Human Feeding), by G. Graham; and "Utilizacion de la Anchoveta el Consumo Humano" (Utilization of the Anchoveta for Human Consumption), by J. Sanchez.

PLANKTON:

An Annual Phytoplankton Cycle in the Lower Chesapeake Bay, by Bernard C. Patten, Richard A. Mulford, and J. Ernest Warinner, Contribution No. 127, 20 pp., illus., printed, (Reprinted from Chesapeake Science, vol. 4, no. 1, March 1963, pp. 1-20.) Virginia Institute of Marine Science, Gloucester Point, Virginia.

Chaetognatha from Inshore Coastal Waters Off Delaware, and a Northward Extension of the Known Range of SAGITTA TENUIS, by George C. Grant.

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Contribution No. 125, 5 pp., illus., printed. (Reprinted from *Chesapeake Science*, vol. 4, no. 1, March 1963, pp. 38-42.) Virginia Institute of Marine Science, Gloucester Point, Virginia.

"Population Dynamics of Some Fresh-Water Zooplankton. II--The Effect of Lag," by Donald H. Haze-wood and Richard A. Parker, article, *Ecology*, vol. 44, no. 1, Winter 1963, pp. 207-211, illus., printed, single copy \$2.50. Circulation Office, Duke University Press, Box 6697, College Station, Durham, N. C.

POISONOUS FISH:

An Investigation of Ciguatera Poison, by Bruce W. Halstead, Donald W. Hessel, and John Suchy, Final Report (June 1, 1961-September 30, 1962), 9 pp., printed, \$1.60. World Life Research Institute, Colton, Calif., March 1963. (For sale by the Office of Technical Service, U. S. Department of Commerce, Washington 25, D. C.)

PORPOISES:

Porpoise Performance Tests in a Sea-Water Tank, by Thomas G. Lang and Dorthy A. Daybell, NOTS TP 3063, 50 pp., printed, \$5.60. Naval Ordnance Test Station, China Lake, Calif., January 1963. (For sale by the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.)

PORTUGAL:

"La Expansion de las Exportaciones Portuguesas de Conservas de Pescado" (The Expansion of Portuguese Canned Fish Exports), article, *Industria Conservera*, vol. XXXIX, no. 285, March 1963, p. 65, printed in Spanish. Union de Fabricantes de Conservas de Galicia, Calle Marques de Valladares, 41, Vigo, Spain.

PURSE-SEINE FISHERY:

"Notfisket i Lofoten" (Net Fishing at Lofoten Islands), by Arvid Hylen, article, *Fiskets Gang*, vol. 48, no. 43, October 25, 1962, pp. 581-587, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

QUALITY:

Studies on the Quality of Sea Food, by Keiichi Oishi, 68 pp., illus., printed. (Reprinted from *Memoirs of the Faculty of Fisheries, Hokkaido University*, vol. 10, no. 2, 1962, pp. 67-138.) The Faculty of Fisheries, Hokkaido University, Hakodate, Japan. Discusses factors influencing the quality of fish. Three typical samples of fish in Japan were chosen for this study. Part 1 is concerned with studies of fresh fish quality using 15 species of flatfish. Only fresh fish were used as samples in order to simplify the factors involved. So, no consideration was given to the freshness of a sample in this study. In Part 2, *katsuobushi* (dried skipjack) was studied as representing processed fish in which boiling, sun-drying, smoking, and inoculation of molds are combined skillfully during the course of processing. In Part 3, a study is described of one of the edible seaweeds, *kombu*, which is an important item in the Japanese diet.

REFRIGERATED TRAILERS:

The Cold-Wall Trailer--Maintaining Frozen Food Below Zero, by David W. Kuenzli, Marketing Research Report No. 540, 36 pp., illus., processed.

Agricultural Marketing Service, U. S. Department of Agriculture, Washington 25, D. C., June 1962. This study is part of a broad program of research to improve the design and performance of transportation equipment used in the movement of agricultural products. The study on which this report is based was conducted to evaluate a new type of trailer design, based on the principle of enclosing the load on all sides with a blast of cold air, thereby picking up the heat transmitted through the trailer walls, floor, and ceiling before it reached the product. A companion trailer of conventional design was used for comparison in each test. Although the study was for agricultural products, this will be of interest to those transporting fishery products.

SALMON:

"Breeding Salmon Artificially--The Full Story," by John Murdoch, article, *World Fishing*, vol. 11, August 1962, pp. 61-62, printed. John Trundell & Partners Ltd., St. Richard's House, Everholt St., London NW1, England.

Enumeration of Red Salmon Smolt Migration, by O. E. Kerns, Jr. and R. A. Marriott, Informational Leaflet No. 25, 18 pp., illus., processed. Alaska Department of Fish and Game, Subport Bldg., Juneau, Alaska, March 1963.

"Fatty Degeneration in Salmon," article, *New Scientist*, vol. 15, August 23, 1962, p. 420, printed. Harfison, Raison and Co. Ltd., Cromwell House, Fulwood Pl., High Holborn, London WC1, England.

On Growth Fluctuation in Baltic Salmon, by Arne Lindroth, No. 7, 10 pp., illus., printed. Salmon and Trout Committee, International Council for the Exploration of the Sea, Charlottenlund-Slot, Denmark, 1961.

"Pelleted Fish Food Produces Healthier, Cheaper Salmon," article, *Feedstuffs*, vol. 34, September 29, 1962, p. 17, printed. Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

Salmon Gear Limitation in Northern Washington Waters, by William F. Royce and others, Contribution No. 145, University of Washington Publications in Fisheries, New Series, vol. II, no. 1, 129 pp., illus., printed. College of Fisheries, University of Washington, Seattle, Wash., February 1963. An economic, biological, and legal survey of the salmon resource of Northern Puget Sound and Strait of Juan de Fuca. According to the authors, "The excess fishing gear used to harvest the salmon resource of the northern Puget Sound and the Strait of Juan de Fuca has endangered the conservation of the salmon runs and greatly reduced the earnings of the men and vessels engaged. The International Pacific Salmon Fisheries Commission has officially requested that the gear be reduced, but it lacks the power to require its reduction. This study is the result of a request by the Governor's Fishery Advisory Committee and the Legislative Interim Committee on Fisheries to the University of Washington. The study has been organized in three main parts: (A) Biostatistical analyses of the catches to determine the amount by which the gear can be reduced and the runs still harvested; (B) Economic studies to determine the recent earnings of men and vessels and to estimate the effect on

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earnings of a reduction in gear; and (C) Legal studies to determine whether a legislatively-prescribed scheme for restricting the number of units of gear fishing would be valid.¹¹ The findings of the study are discussed, and recommendations are made for specific steps to reduce the number of units of fishing gear.

"Salmon, Steelhead...and Fish Screens," by Don Corley, article, *Idaho Wildlife Review*, vol. XV, no. 6, May-June 1963, pp. 3-7, illus., printed, Idaho Fish and Game Commission, 518 Front St., Boise, Idaho.

Size of Pink Salmon Downstream Migrants, by W. L. Sheridan and W. H. Noerenberg, *Informational Leaflet No. 27*, 20 pp., illus., processed, Alaska Department of Fish and Game, Support Bldg., Juneau, Alaska.

Studies on the Petroleum Odour in Canned Chum Salmon, by Terushige Motohiro, 69 pp., illus., printed, (Reprinted from *Memoirs of the Faculty of Fisheries, Hokkaido University*, vol. 10, no. 1, 1962, pp. 1-65.) The Faculty of Fisheries, Hokkaido University, Hakodate, Japan.

SARDINES:

"Granographical Life Record Curve Method for Identifying Each Stock of Pelagic Fishes. II--Identification of Sardine Stocks in West-Coastal Waters of Kyushu; III--Appraisal of the Age and Growth by Stock for Sardine Groups in the Japan Sea and West Kyushu Waters," by Hideaki Yasuda, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 29, no. 1, January 1963, pp. 14-20, illus., printed in Japanese with summary in English, Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba Kaigandori 6, Minato-ku, Japan.

SAURY:

"Technical Factors Affecting Boat-Day Catch in Lift Net Fishing for Saury," by Shin'ichi Yajima, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 29, no. 3, March 1963, pp. 235-241, illus., printed in Japanese with summary in English, Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba Kaigandori 6, Minato-ku, Japan.

SCALLOPS:

"Sea Scallops Thrive in the Lab," by Eugene S. Clark, Jr., article, *National Fisherman/Maine Coast Fisherman*, vol. 43, August 1962, pp. 27, 29, printed, National Fisherman, Journal Publishing Co., Belfast, Me.

SEALS:

"Underwater Sounds of Pinnipeds," by William E. Schevill, William A. Watkins, and Carleton Ray, article, *Science*, vol. 141, no. 3575, July 5, 1963, pp. 50-53, illus., printed, American Association for the Advancement of Science, 1515 Massachusetts Ave. NW, Washington 5, D. C. Descriptions and analyses are presented of underwater sounds made by six species of seals in captivity. The suitability of these very faint sounds for echolocation is discussed.

SEA TROUT:

Age and Size Composition of Weakfish, Cynoscion regalis, from Pound Nets in Chesapeake Bay, Virginia, 1954-1958, by William H. Massmann, Contribution No. 126, 9 pp., illus., printed, (Reprinted from *Chesapeake Science*, vol. 4, no. 1, March 1963, pp. 43-51.) Virginia Institute of Marine Science, Gloucester Point, Virginia.

Annulus Formation on the Scales of Weakfish, Cynoscion regalis, of the Chesapeake Bay, by William H. Massmann, Contribution No. 129, 3 pp., illus., printed, (Reprinted from *Chesapeake Science*, vol. 4, no. 1, March 1963, pp. 54-56.) Virginia Institute of Marine Science, Gloucester Point Virginia.

SEA URCHIN:

"On the Growth of the Sea Urchin, *Hemicentrotus pulcherrimus*," by Akira R. Fuji, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 29, no. 2, February 1963, pp. 118-126, illus., printed, Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba Kaigandori 6, Minato-ku, Japan.

SHELLFISH:

"Studies on Muscle of Aquatic Animals. XXXV--Seasonal Variation of Chemical Constituents and Extractive Nitrogens in Some Species of Shellfish," by Itiro Takagi and Wataru Simidu, article, *Bulletin of the Japanese Society of the Scientific Fisheries*, vol. 29, no. 1, January 1963, pp. 66-70, printed in Japanese and English, Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba Kaigandori 6, Minato-ku, Japan.

SHRIMP:

"Culture of Kuruma-Shrimp (*Penaeus japonicus*)," by M. Fujinaga, article, *Current Affairs Bulletin*, no. 36, April 1963, pp. 10-11, printed, Indo-Pacific Fisheries Council, FAO Regional Office, Bangkok, Thailand. The author states that, "Though there are some variations in the timing of the spawning of Kuruma-shrimp according to areas, the spawning occurs in late April through early October in Seto Inland Sea, the peak being reached in Mid-June through early September. The number of eggs spawned by an adult shrimp is variable according to the size of spawner.... Very simple treatment is required to let them ovulate." The procedures applied at present in the shrimp hatchery at Takamatsu, Japan, are discussed.

SMALL BUSINESS MANAGEMENT:

Buying and Selling a Small Business, by Verne A. Bunn, Management Research Summary, 2 pp., processed, Small Business Administration, Washington 25, D. C., 1963. Points out that the process of buying or selling a small business begins with the acquiring of adequate information in three general areas; (1) market information, (2) financial information, and (3) legal information. An early understanding must be reached as to just which assets of the business the buyer is acquiring. It is to the advantage of both buyer and seller to have the terms and conditions of the buy-sell agreement set down in a written contract.

Checking Your Management Methods, by Robert E. Levinson, Management Aid No. 153, 4 pp., processed.

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Small Business Administration, Washington 25, D. C. Discusses 10 management methods which apply to the business itself and 6 which pertain to the owner's work as a manager.

Factors in the Growth of Manufacturing Firms, by Joseph W. McGuire, Management Research Summary, 2 pp., processed, Small Business Administration, Washington 25, D. C. Points out that the most important factor affecting the rate of growth of a business is the management's conscious effort to stimulate growth. For the purposes of the study, growth was measured by expansion in sales. External forces, the report states, might appear to speed up the growth of some enterprises for a short time. But for long-sustained expansion in sales, management had to take conscious and positive action toward that end.

Federal Taxes and the Legal Form of Small Firms, Management Research Summary, 2 pp., processed, Small Business Administration, Washington 25, D. C., 1963. Points out that Congress has given small-business owners a number of alternatives intended to prevent Federal income taxes from imposing undue burdens on small firms. One of these choices is whether the business shall be a proprietorship, a conventional corporation, or a corporation that elects the tax plan allowed by Subchapter S of the Internal Revenue Code.

International Marketing Assistance in Europe, by Wilfried A. Hoellge, Management Aid No. 152, 4 pp., processed, Small Business Administration, Washington 25, D. C. Describes the kinds of international marketing assistance which Western European organizations offer. Some of it is free, such as various publications of the Organization for Economic Cooperation and Development and the International Chamber of Commerce. Some of the assistance, such as the work of advertising agencies and private consultants, costs money. All of the sources listed in the report should be helpful to small businessmen who seek to learn more about sales opportunities in the 18 markets that make up Western Europe.

Management Planning in Small Firms, by Preston P. LeBreton, Management Research Summary, 4 pp., processed, Small Business Administration, Washington 25, D. C., 1963. Points out that a small business manager who follows an orderly planning procedure, using the proper tools of planning, is likely to keep his business on a stable and profitable course. Tools for managerial planning include operations research, motivation research, break-even analysis, market research, forecasting, and budgeting. Some of the newer tools--such as operations research and motivation research--cannot be carried on by small firms without outside help. But small firms can get the benefit of recent developments by hiring management consultants.

SOUTH AFRICA AND SOUTH-WEST AFRICA:

"Over One-Million Tons of Shoal Fish Landed in Year Under Review" (Annual Report 1961-1962), article, The South African Shipping News and Fishing Industry Review, vol. XVIII, no. 3, March 1963, pp. 61, 63, 65, 67, printed, single copy 25 cents. Thomson Newspapers, South African (Pty.) Ltd., Trust House, Thibault Sq., Box 80, Cape Town, South Africa Republic.

Details of the fifth consecutive year of record landings by the South African and South-West African in-shore fishing industry. While landings of pilchards by South African and South-West African fishermen in the calendar year 1961 at 818,500 tons represented the largest catch of this fish ever taken in a season in Southern African waters, for the nine months ended September 30, 1962, the figure was 882,960 tons. In addition to the application of more efficient techniques, the increase in size and capacity of boats employed and their longer range and increased power have been factors contributing to the development of the fisheries. The vast bulk of the catch in both the Republic and South-West Africa was delivered to reduction plants.

SPAIN:

"L'activité des pêcheurs espagnols dans l'Atlantique-Sud" (The Activity of Spanish Fishermen in the South Atlantic), by V. Paz-Andrade, article, La Pêche Maritime, vol. 42, no. 1022, May 1963, pp. 317-326, illus., printed in French. La Pêche Maritime, 190 Boulevard, Haussmann, Paris, France.

"Otro Aspecto de la Exportación de Conservas de Pescado" (Another Outlook on the Exportation of Canned Fish), by Mareiro; and "La Industria Española de Conservas de Pescado" (The Spanish Canned Fish Industry), article, Industria Conservera, vol. XXIX, no. 286, April 1963, pp. 87-88, 92-95, illus., printed. Redaccion y Administracion, Calle Marques de Valladares, 41, Vigo, Spain.

SPINY LOBSTERS:

"Notes on the Cultured Larvae of the Japanese Spiny Lobster, *Panulirus japonicus* (V. Siebold)" by Masaaki Inoue and Makoto Nonaka, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 29, no. 3, March 1963, pp. 211-218, illus., printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba Kaigandori 6, Minato-ku, Japan.

SPOILAGE:

"Decomposition in Shellfish," by Cynthia Campbell, article, Journal of the Association of Official Agricultural Chemists, vol. 45, August 1962, pp. 731-733, printed. Association of Official Agricultural Chemists, P. O. Box 540, Benjamin Franklin Station, Washington 4, D. C.

"Non-Bacterial Spoilage in Atlantic Groundfish: Metal-Included Rancidity," by C. H. Castell, Jacqueline Dale, and N. Damberg, article, Canadian Fisherman, vol. 49, September 1962, pp. 30-33, printed. National Business Publications Ltd., Gardenvale, Que., Canada.

"Observations on the Spoilage of Crabmeat," by Melvin A. Benarde, article, Journal of Milk and Food Technology, vol. 21, November 1958, pp. 318-320, printed. International Association of Milk and Food Sanitation, Box 437, Shelbyville, Ind.

SQUID:

"Economic Importance of North Atlantic Squids," by Malcolm R. Clarke, article, New Scientist, vol. 17, no. 330, March 14, 1963, pp. 568-570, illus., printed. New Scientist, Cromwell House, Fulwood Place, High Holborn, London WC1, England. In the Pacific and

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Mediterranean, squid and octopus are an important source of protein, suitable for human or animal food, fertilizer, and for bait. According to the author, "The evidence from whales' stomachs shows that there are enormous squid populations to be caught in the deep Atlantic."

STANDARDS:

"Normas para la exportacion de pescados, crustaceos y moluscos" (Standards for the Export of Fish, Crustaceans, and Mollusks), article, *Boletín de Informacion del Sindicato Nacional de la Pesca*, no. 51, December 1962, pp. 14-15, processed in Spanish. Sindicato Nacional de la Pesca, 18-20 Paseo del Prado, Madrid, Spain.

STORAGE LIFE:

"Time and Temperature vs. Storage Life in Canned Meats," article, *National Provisioner*, vol. 147, September 1, 1962, pp. 12, 14, 22, printed. National Provisioner Inc., 15 West Huron St., Chicago 10, Ill.

SWITZERLAND:

Import Tariff System of Switzerland, OBR-63-98, 4 pp., processed, 15 cents. Bureau of International Commerce, U.S. Department of Commerce, Washington, D. C., April 1963. (For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C.) Presents information on units of currency, weights, and measures; bases of specific and ad valorem duties; preferential duties; sales and other internal taxes; trade restrictions; other special regulations; and related subjects.

TAGGING:

"A Coded Wire Identification System for Macro-Organisms," by K. B. Jefferts, P. K. Bergman, and H. F. Fiscus, article, *Nature*, vol. 198, no. 4879, May 4, 1963, pp. 460-462, illus., printed. St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y. Describes a system for identification of macro-organisms which has been applied to the Pacific salmon (*Oncorhynchus* sp.). As the title suggests, the information carrier utilized is a small segment of ferromagnetic wire, coded in one of several fashions. It is implanted in muscle or cartilage, and its presence is determined through the external effects of a permanent magnetic moment impressed on the wire segment.

"An Evaluation of Five Tag Types Used in a Striped Bass Mortality Rate and Migration Study," by Harold K. Chadwick, article, *California Fish and Game*, vol. 49, no. 2, April 1963, pp. 64-83, illus., printed, single copy 75 cents. Printing Division, Documents Section, Sacramento 14, Calif.

TARIFFS:

United States Import Duties (1963), TC Publication 92, 413 pp., processed, \$1.50. United States Tariff Commission, Washington, D. C., 1963. (For sale by Division of Public Documents, U.S. Government Printing Office, Washington 25, D. C.) New edition (replaces United States Import Duties, 1962) shows the United States rates of duty on imports in effect on July 1, 1963. The primary purpose of this volume is to provide an up-to-date presentation of the United States tariff in a form which will enable the general user to ascertain current import-duty rates with the least possible difficulty. The dutiable list, Tariff

Act of 1930, Schedules 1-15, describes individual commodities and for each shows full rate and reduced rate of duty. Also shows free list, Tariff Act of 1930; processing taxes, Internal Revenue Code; special and additional import duties; and special exemptions and restrictions. Also contains an index of commodities carried in dutiable and free lists. The new edition is in loose-leaf form, and will be effective until such time as the revised Tariff Schedules of the United States go into effect.

TERRITORIAL WATERS:

"La question des eaux territoriales doit être résolue sur le plan communautaire" (The Question of Territorial Waters must be Resolved by a Community Plan), article, *La Pêche Maritime*, vol. 42, no. 1022, May 1963, pp. 292-296, illus., printed in French. La Pêche Maritime, 190 Boulevard, Haussmann, Paris, France.

TRAINING:

"Course for Apprentice Fishermen. (17) Handling a Ship--and How a Ship Handles," article, *World Fishing*, vol. 11, February 1962, pp. 59-60, 63, printed. John Trundell & Partners Ltd., St. Richard's House, Everholt St., London NW1, England.

"Course for Apprentice Fishermen. (18) Handling a Ship in Dock," March 1962, pp. 55-56, 59-60.

"Course for Apprentice Fishermen. (20) How to Understand Charts," May 1962, pp. 34-37.

TRAP FISHING:

"Men and Dories Dominate Trap Fishing Down East," article, *Fish Boat*, vol. 7, September 1962, pp. 16-17, 44-45, printed. H. L. Peace Publications, 624 Gravier St., New Orleans 9, La.

TRAWLERS:

"Un Chalut Pelagique a un Seul Bateau pour la Pêche Industrielle" (A Pelagic Trawl for Commercial Fishing Using a Single Vessel), by C. Nedelec, article, *Science et Pêche*, no. 110, December 1962, pp. 1-13, illus., printed in French, 0.50 NF (about 10 U. S. cents). L'Institut Scientifique et Technique des Pêches Maritimes, 59, Avenue Raymond-Poincaré, Paris (16^e), France. (In *Commercial Fisheries Review*, vol. 25, no. 6, June 1963, p. 125, the listing of the article in *France Pêche*, no. 70, February 1963, did not mention that it originally appeared in *Science et Pêche*. This was called to our attention by Institut Scientifique et Technique des Pêches Maritimes.)

*Energeticheskies Ustanovki Rybolovnikov Traulerov (Power Installations on Fishing Trawlers), by L. P. Korshunov, R. 26681, printed in Russian, 1962.

"Improving Trawl Performance," by J. Phillips, article, *World Fishing*, vol. 12, no. 6, June 1963, pp. 75-77, illus., printed. John Trundell & Partners Ltd., St. Richard's House, Everholt St., London NW1, England.

"The Ross North Sea Experiment," article, *World Fishing*, vol. 12, no. 6, June 1963, pp. 141-142, illus., printed. Trundell & Partners Ltd., St. Richard's House, Everholt St., London NW1, England. Describes the various features of Britain's new stern trawler *Ross Daring*, the first of two similar vessels, scheduled to fish in the North Sea.

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"Vee-Form Trawl Doors," article, *World Fishing*, vol. 12, no. 6, June 1963, pp. 68-69, illus., printed, John Trundell & Partners Ltd., St. Richard's House, Eversholt St., London NW1, England.

TROUT:

"Experiment Indicates Cause of Trout Disease," article, *Outdoor California*, vol. 24, no. 5, May 1963, p. 13, illus., printed, Department of Fish and Game, 722 Capitol Mall, Sacramento 14, Calif.

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Trout Farming, by David Greenberg, 197 pp., illus., printed, regular list price \$12. (Special combination offer, including one year's subscription to the *U. S. Trout News* and one copy of Trout Farming, both for only \$10.50.) *U. S. Trout Farmers Association*, 110 Social Hall Ave., Salt Lake City, Utah. Contains background information on various trout, including new hybrids; history of artificial propagation; future of the trout industry; anatomy; physiology and embryology of trout; sorting, grading, and transporting; trout diseases; marketing methods; and information on water and water measurements.

"Water Temperature and Oxygen Demand," by Jack Coates, article, *U. S. Trout News*, vol. 7, September-October 1962, pp. 5, 20-21, printed, *U. S. Trout Farmers Association*, 110 Social Hall Ave., Salt Lake City 11, Utah.

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An Account of the Bluefin Tuna in Newfoundland Waters with Some Reference to the Tuna Fishes in General, by Gordon R. Williamson, 30 pp., illus., processed, Newfoundland Tourist Development Office, Confederation Bldg., St. John's, Newfoundland, 1962. Discusses the general characteristics of the tuna species; the bluefin tuna (*Thunnus thynnus*); the fishery for this species at Conception Bay, Newfoundland; its migration and life history in the western North Atlantic; commercial tuna fishing; and future prospects for the fishery in Newfoundland.

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"A Comparative Study of Tuna Longline Baits," by K. Sivasubramaniam, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 29, no. 3, March 1963, pp. 245-250, illus., printed, Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba Kaigandori 6, Minato-ku, Japan.

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seine fishing and the brine-spray freezing system on board the vessels.

"Inshore Longlining for Yellowfin Tuna," by P. D. Lorimer, article, *Fisheries Newsletter*, vol. 22, no. 6, June 1963, pp. 21-23, illus., printed, Commonwealth Director of Fisheries, Department of Primary Industry, Canberra, Australia.

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"Monofilament Netting of Striped Tuna," by Alan Temple, article, *Fisheries Newsletter*, vol. 22, no. 6, June 1963, pp. 15-16, printed, Commonwealth Director of Fisheries, Department of Primary Industry, Canberra, Australia. According to the author, skipjack tuna "are known to occur in large quantities on the east coast of Australia and down to Tasmania, but they have never been fished to any extent for commercial purposes." This article describes experiments with monofilament mesh netting in fishing for tuna which give every promise of success. The author states that, "monofilament mesh netting can be carried out on shallow grounds and in weather conditions in which it would be practically impossible to operate a purse seine successfully."

"A Preliminary Report on Tuna in West Coast Waters of South Africa. Part II," by B. van der Jager, C. S. de V. Neppen, and R. J. van Wyk, article, *The South African Shipping News and Fishing Industry Review*, vol. XVIII, no. 5, May 1963, pp. 61, 63, 65, 67-69, illus., printed, single copy 25 cents, Thomson Newspapers, South Africa (Pty.) Ltd., Box 80, Cape Town, South Africa Republic.

"Relation Between Annual Variation of Hooking-Rate and Age Groups of Yellowfin Tuna in the Tropical Western Pacific Ocean. II--Relation Between Annual Variation of Hooking-Rate and Year Class," by Jun Nakagome, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 29, no. 1, January 1963, pp. 21-26, illus., printed in Japanese with summary in English, Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba Kaigandori 6, Minato-ku, Japan.

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TUNISIA:

Seafish of Tunisia and the Central Mediterranean, 139 pp., illus., processed, 750 millimes (US\$1.80), British Chamber of Commerce, Place de la Victoire, Tunis, Tunisia. A catalog of all fish and other marine life found in Tunisian waters according to

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

scientific classification, giving their names in five languages (English, French, Italian, Greek, and Tunisian Arabic). It includes explanatory remarks and sketches directed to the layman. A short section concerns general rules on the care of fish, along with various recipes used in Tunisia.

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"Camouflaged Still-Fishing," by H. Hediger, article, *Natural History*, vol. LXXII, no. 6, June-July 1963, pp. 18-21, illus., printed, single copy 50 cents. The American Museum of Natural History, Central Park West at 79th Street, New York 24, N. Y.

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"La Industria Pesquera en Rusia" (The Fishing Industry in Russia), by F. de Varona, article, *Puntal--Revista Maritima y Pesquera*, vol. X, no. 107, February 1963, pp. 14-15, illus., processed, *Puntal--Revista Maritima y Pesquera*, Ramon y Cajal 3, Apartado 316, Alicante, Spain.

VESSELS:

"Operational Experience of Modern Boats on Atlantic Seaboard, Part I--Introduction," by John Proskie, article, *Canadian Fisherman*, vol. 49, September

1962, pp. 23-25, printed. National Business Publications Ltd., Gardenvale, Quebec, Canada.

VITAMIN A:

"Vitamin A Utilization by the Chick as Affected by Type of Vitamin A Concentrate and Other Factors," by I. Ascarelli and Miriam Senger, article, *Journal of the Science of Food and Agriculture*, vol. 13, June 1962, pp. 332-338, printed. The Society of Chemical Industry, 14 Belgrave Sq., London SW1, England.

WHALING:

"Pelagic Whaling in the Antarctic Season 1962/63," article, *Norsk Hvalfangst-Tidende*, vol. 52, no. 4, April 1963, pp. 107-108, 110, 112-114, printed in Norwegian and English. *Norsk Hvalfangst-Tidende*, Sandefjord, Norway. Discusses details of the catch and vessels participating in the 1962/63 whaling season under the flag of Norway, the United Kingdom, the Netherlands, Japan, and the U.S.S.R. Includes statistics showing the harvest of blue whale units for those countries; average number of blue whale units per catcher day by countries with comparative data for the last five seasons; production of whale and sperm oil of the individual expeditions for the last three seasons; and other pertinent data for the whaling fleets of the five nations.



CONSERVATION HAS GONE TO SEA

The "era of the sea" is a term which someday may be applied to the latter decades of the 20th century--the time when man began to explore the possibilities of raising his seafood instead of hunting for it.

Heavier fishing by more nations and the realization that sea life, like land life, can be destroyed by over-harvest, has prompted man to apply conservation practices to the sea.

The United States is a member of nine international commissions which regulate to some extent sea harvest; many biologists and oceanographers are getting information which will aid in conservation of present resources and still others are working toward the time when "farming the sea" will be an actual fact.

Helping adjust fisheries and wildlife resources to food and recreational needs of the Nation is the task of the Fish and Wildlife Service



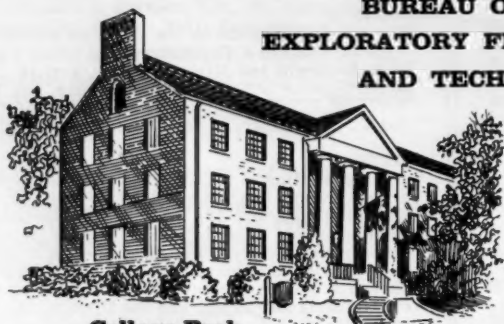
FISH AND WILDLIFE SERVICE

U. S. DEPARTMENT OF THE INTERIOR

Mistakes man made on land need not be repeated at sea.

S-3

**BUREAU OF COMMERCIAL FISHERIES
EXPLORATORY FISHING & GEAR RESEARCH
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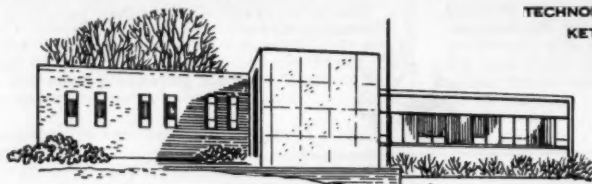
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COLLEGE PARK, MARYLAND



Ketchikan

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KETCHIKAN, ALASKA



Gloucester

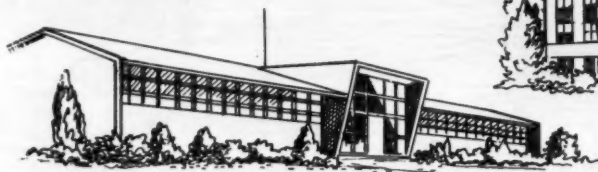
TECHNOLOGICAL LABORATORY

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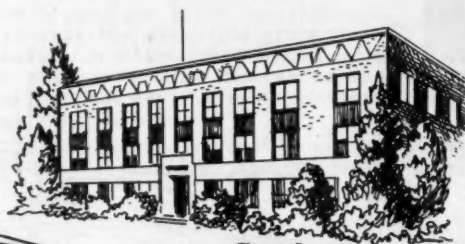
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Pascagoula



EXPLORATORY FISHING BASE & TECHNOLOGICAL LABORATORY,
PASCAGOULA, MISSISSIPPI



Seattle

TECHNOLOGICAL LABORATORY,
BIOLOGICAL LABORATORY, &
EXPLORATORY FISHING BASE,
SEATTLE, WASHINGTON

RAINBOW TROUT SCANDINAVIAN

6 pan-dressed rainbow trout or other
small fish, fresh or frozen
1¹/₂ teaspoon salt
Dash pepper
1 cup chopped parsley
1/4 cup butter or margarine, softened

1 egg, beaten
1/4 cup milk
1 teaspoon salt
1/4 cup toasted dry bread crumbs
1/2 cup grated Swiss cheese
3 tablespoons melted fat or oil

Thaw frozen fish. Clean, wash, and dry fish. Sprinkle inside with salt and pepper. Add parsley to butter and mix thoroughly. Spread inside of each fish with approximately 1 tablespoon parsley butter. Combine egg, milk, and salt. Combine crumbs and cheese. Dip fish in egg mixture and roll in crumb mixture. Place on a well-greased cooky sheet, 12 x 15 inches. Sprinkle remaining crumb mixture over top of fish. Bake in an extremely hot oven, 500° F., for 10 to 15 minutes or until fish flakes easily when tested with a fork. Serves 6.

You will find your pot of gold at the end of a rainbow trout meal. This popular fish, made golden with cheese and a greasy in a hot oven in 15 minutes, will "strike" the fancy of the entire family and send your "what do I serve?" blues on the "fly".



--From Fisheries Marketing Bulletin: "Protein Treasure from the Seven Seas." Issued by the National Marketing Services Office, U. S. Bureau of Commercial Fisheries, Chicago 5, Ill.



FEDERAL FINANCIAL AID to the FISHING INDUSTRY of the UNITED STATES

The Bureau of Commercial Fisheries has three programs to provide financial assistance for the fishing industry. One program provides loans at 5% simple interest, a second will insure mortgages and loans for premiums of 1% or less, and the third offers differential subsidies up to 33 1/3% of the cost of new vessel construction.

FISHERY LOANS FOR VESSELS, GEAR, AND RESEARCH

Loans may be obtained for financing and refinancing fishing operations, for maintenance and repair of fishing vessels and gear, and for research into basic fishery problems. Other qualified uses for loans are to purchase new fishing or vessel equipment, such as engines, fishing gear, and electronic or refrigeration equipment.

The loan fund also provides a source of money for buying a fishing vessel to replace one that has been lost or withdrawn from commercial fishing because of inefficiency or obsolescence. Applications for replacement loans must be received within two years after the vessel was lost or withdrawn.

Generally, one loan can accomplish the dual purpose

of consolidating all vessel debts and effecting improvements.

To qualify for a fishing loan, an applicant must show evidence of his ability to operate successfully and prove that reasonable financing is not otherwise available.

Interest rates are 5% per annum on the actual outstanding balance. Loan maturities may extend to ten years.

The Government makes no charge for information and assistance in the preparation and filing of a loan application.

FISHING VESSEL MORTGAGE AND LOAN INSURANCE

The Government will insure mortgages up to 75% of the cost of construction, reconstruction, or reconditioning of commercial fishing vessels. Applicants for this insurance must arrange with banks, or other qualified lenders, for the money to be borrowed. The mortgage or loan may bear interest up to 6%, and may have a maturity date of fifteen years.

Credit requirements to be met before a mortgage or loan can be insured will be about the same as those of most commercial banks. Premium rates for this insurance are 1%, or less, of the average amount outstanding.

Applications are made jointly by borrower and lender and must be filed ninety days prior to the anticipated date of closing the transaction. A commitment to insure a mortgage or loan must be approved prior to the launching of the vessel.

VESSEL CONSTRUCTION DIFFERENTIAL SUBSIDY

Financial assistance is available to correct inequities between foreign and domestic costs of construction of fishing vessels. Amounts up to one-third of the cost of construction of a new fishing vessel may be paid, provided the vessel, the owner of the proposed vessel, and the fishery in which the vessel will fish meet certain requirements. Among these is a requirement that the fishery involved must be suffering injury by reason of increased imports of a like or directly competitive product.

Applications and more detailed information regarding these programs may be obtained from the Director, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington, D. C. 20240.

